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## APPENDIX III.

[Vide Item IV—Paper laid on the table of the House, page 673 supra.]

G.O. No. 246, Revenue, 8th February 1930.

[Agency—Development of Agriculture—Mr. Munro's report—Recorded.]

READ—the following papers :—

## I

Letter from R. D. ANSTEAD, Esq., M.A., C.I.E., Director of Agriculture, to the Secretary to Government, Development Department, dated the 19th April 1928, D. Dis. No. D. 722/27.

With reference to G.O. Mis. No. 4, dated 4th January 1928, I have the honour to forward herewith in duplicate a copy of Mr. Munro's report on his visit to the Agency to examine the conditions prevailing there in regard to cultivation of fruit, coffee, potatoes, etc., and the possibilities of the area and the most suitable way in which the Agricultural department can assist in developing it.

2. I venture to think that Government will agree with me that this is a very complete and carefully compiled report and that it reflects great credit on Mr. Munro who has evidently given the matter his most careful attention.

3. It appears to me that any development of the Agency must be along the following lines and in the order named :—

(1) An investigation of the malaria problem by the Medical department and the mitigation of this scourge.

(2) The improvement of education in the primary schools.

(3) The improvement of irrigational facilities.

(4) The improvement of the cattle by posting of Government stud bulls in charge of the Veterinary officers and the systematic castration of other male stock.

4. Until these important matters have been taken in hand and attended to, I do not think the Agricultural department can do anything to develop the Agency. The Agricultural department can only begin its sphere of usefulness when facilities for success and a demand for agricultural knowledge have been created.



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## ENCLOSURE.

REPORT ON VISIT TO AGENCY TRACTS DURING  
FEBRUARY 1928.

## (1) AREA.

The Agency tracts of the Ganjam, Vizagapatam and Godavari together cover an area of 19,287 square miles and include the following taluks :—

*Ganjam.*

- |                        |                          |
|------------------------|--------------------------|
| (1) Ghumsur-Udayagiri. | (3) Ramagiri-Udayagiri.  |
| (2) Balliguda.         | (4) Part of Parlakimedi. |

*Vizagapatam.*

- |                    |                  |
|--------------------|------------------|
| (1) Rayaghada.     | (6) Nowrangapur. |
| (2) Gunupur.       | (7) Malkanagiri. |
| (3) Bissameuttack. | (8) Pottangi.    |
| (4) Koraput.       | (9) Padwa.       |
| (5) Jeypore.       | (10) Gudem.      |

*East Godavari.*

- |                 |                   |
|-----------------|-------------------|
| (1) Polavaram.  | (4) Bhadrachalam. |
| (2) Yellavaram. | (5) Nugur.        |
| (3) Chodavaram. |                   |



In Ganjam, Balliguda and Ghumsur-Udayagiri taluks belong mostly to Government, while Ramagiri-Udayagiri and Parlakimedi are mostly zamindari lands. In Vizagapatam, Jeypore zamindari includes the first nine taluks, while Gudem belongs mainly to Government.

## (2) GENERAL FEATURES.

The main feature of the tract as a whole, is the range of the Eastern Ghats, which roughly traverses it from north to south. The elevation varies considerably, in G. Udayagiri and Balliguda taluks, in the north, it runs about 2,000 feet, drops further south to about 1,000 feet and rises in Ramagiri-Udayagiri to a general level of 3,000 feet. The Chokapad Khandam on the north-east corner is a small plateau by itself of about 1,000 feet mean elevation. In Vizagapatam, the 3,000 feet plateau includes Pottangi, Padwa and Koraput, while Gudem is about the same elevation or slightly lower. Near Salur and to the south, the eastern side drops abruptly to the plains. Further to the north Bissameuttack, Gunupur, and Rayaghada are about 1,000—2,000 feet. On the western side, there is a fairly abrupt drop to the 2,000 feet plateau, which includes Jeypore and Nowrangapur and extends south-west until it runs into the 1,000 feet plateau, which includes most of Malkanagiri taluk.

For the greater part, the country is hilly with varying sizes of valleys between. Near Pottangi on the 3,000 feet plateau to the east of Sembliguda, there is a range of hills, the highest peak of which rises to 5,815 feet. Proposals are being considered for the formation of a hill station there.



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*Rivers.*—The line of ghats forms the main watershed between the catchment area of the Godavari and the Mahendra Tanya, the Vamasadhara and the Nagavalli, which flow through the Vizagapatam and Ganjam districts. Along the north-east boundary of the Nowrangapur and Koraput taluks, runs another watershed separating the basins of the Godavari and Mahanadi rivers. Besides the Godavari, which flows along the western boundary of the Nugur and Bhadrachalam taluks and leaves the Agency near Polavaram, there are other rivers of considerable size, e.g., Indravati, Saveri and Sileru, which are perennial.

These rivers are fed by masses of small tributaries rising on the hills and flowing through the valleys. Some of them are perennial while others are purely rain-fed and dry up in the hot weather. Of the perennial ones, many are fed during the dry weather from springs on the hill sides. A very good example of such springs is that afforded by the one found at Bodigumma near Lingagodo, where the straw-berries grow. Such springs are known all through hills and are recognized as drinking places for wild animals. Water-supplies for the inhabitants and live-stock of the plateaus are mainly obtained from these perennial streams, but well-boring for water has also been carried out. At Ghumsur-Udayagiri village, water is found about 30—40 feet below ground-level even in dry weather; while in a boring further up the hill, 20 feet of water was found in a 70 feet boring.

In some instances these streams are used for flow irrigation and to a small extent for pot-watering and piccotah work; but the total percentage of water used for irrigation work of any sort is comparatively small. Probably the Savaras in the south of the Ganjam Agency, are the most expert of all tribes in the work of terracing and utilization of streams for flow irrigation. In many cases irrigation water could be stored by a system of tanks. These tanks, however, to be constructed cheaply enough and to hold the water at a sufficiently high level for flow irrigation, would have to be built in the hills. Once the streams reach the valley, deep river-beds are formed in the deep loamy soils there and to bund these to raise the water sufficiently high for irrigation purposes, would cost a considerable amount of money. These low-lying, slow-running streams seem to be responsible for much of the malaria in the district, but to straighten up the channels to ensure a quicker flow and reasonable drip-feed kerosene arrangements, would cost unlimited money. A good example is Koraput stream near the Jail, which was a known defaulter in this respect. Recently it was straightened up, revetted, and packed, and the trouble with mosquitoes has been largely overcome. These facts are mentioned in order to show that while there is a considerable amount of water available, difficulties are found in the way of its efficient use; while the tackling of malaria, which is largely responsible for the lack of sufficient men and capital for development, is also beset with difficulties.

### (3) FORESTS.

A considerable part of the Agency is covered with jungle, which in some cases, consists of magnificent forest and in other cases of scrub. A considerable area of this scrub jungle is used every few years for podu, Kumeri, or shifting cultivation. In some cases, notably on the 3,000 feet plateau between Koraput and Pottangi, the hills are practically bare of even scrub



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jungle and many of the hills when not cultivated, grow grass. It is very noticeable when coming from Jeypore on the 2,000 feet plateau up to the 3,000 feet plateau that the steeper areas on the ghat carry fairly good forest. From the top of the ghat from mile 54, the change in the growth is very marked. This area consisting of parts of the Padwa, Koraput and Pottangi taluks, is practically bare of even scrub jungle. Cultivation is carried on the valleys and almost up to the tops of the hills.

In parts of Nowrangpur and Jeypore, magnificent forests of *Shorea Robusta* are found and these will, when the country is more opened up by railways and roads, give work to a considerable number of men and bullocks in transport. In the southern part of the Agency, teak is found in fairly large quantity. Other trees of importance are—*Terminalia tomentosa*, *Xylia dolabriformis*, *Pterocarpus marsupium*, *Chloroxylon swietenia*, *Drospyros melonoxylon*, and *Dalbergia latifolia*.

Sandalwood is also found in places and has been introduced into others. Forest conservation is receiving more attention and the extraction of valuable timbers therefore is a proposition, which will probably rise to greater volume as transport facilities to the markets increase and an increasing number of men and bullocks or buffaloes will be used in short distance carting to rail heads.

#### (4) CLIMATE.

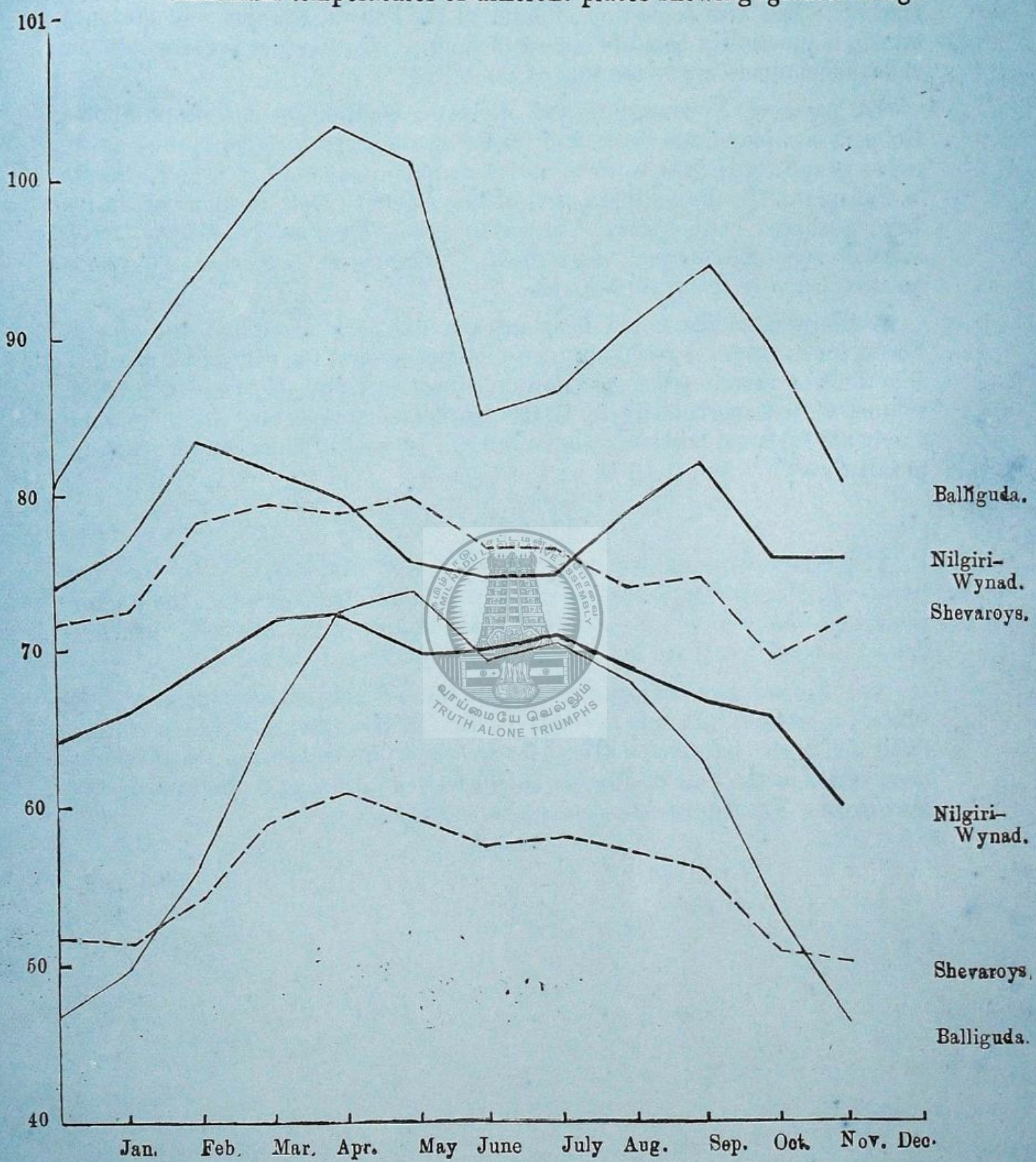
The climate in the Agency varies very considerably. In the low elevations, it is similar to that of the plains adjoining, while in the higher elevations, the nights are cool even in the hottest of hot weather. During the cold season, frosts are not uncommon in the higher elevations.

(a) *Temperature*.—Figures of maximum and minimum temperatures are difficult to obtain, but the average Balliguda (Ganjam district) elevation about 2,000 feet, figures for five years are shown for comparison with figures of an estate in the Nilgiri-Wynad, 3,000 feet elevation, and Yercaud in the Shevaroyes. The figures are also shown as graphs.



Maximum temperatures of different places to show the high temperatures ranging in the Agency tracts.

Minimum temperatures of different places showing greater range.



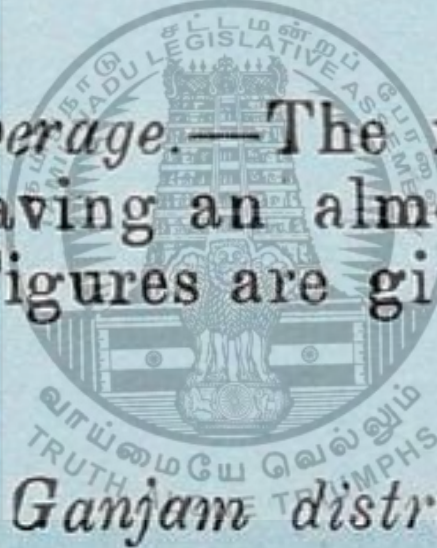


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Maximum and minimum temperatures.

	Maximum.			Minimum.		
	Balliguda.	Yercaud.	Nilgiri-Wynad.	Balliguda.	Yercaud.	Nilgiri-Wynad.
January .. ..	80.4	71.6	74	46.4	51.8	64
February .. ..	87.5	72.5	77	49.7	51.2	66
March .. ..	93.6	77.9	83	56.5	54.7	69
April .. ..	100.2	79.2	82	65.6	59.0	72
May .. ..	103.7	79	80	72.4	60.9	72
June .. ..	101.5	79.7	76	73.7	59.4	70
July .. ..	85.1	77	75	69.8	57.2	70
August .. ..	86.4	77	75	70.7	57.6	71
September .. ..	90.3	73.6	79	68.0	56.7	69
October .. ..	94.6	74.7	82	62.9	55.8	67
November .. ..	89.3	69.8	76	53.3	51.0	66
December .. ..	80.9	71.6	76	46.4	50.0	60

(b) Rainfall—(1) Total average.—The rainfall in the districts varies—Ganjam and Vizagapatam having an almost equal average rainfall, while Godavari is 8 inches lower. Figures are given below :—



Ganjam district.

Average for the Agency tracts			...	...	59.93
Above average.			Below average.		
Balliguda	...	64.17	Dharingabadi	...	56.44
R. Udayagiri	...	63.68	G. Udayagiri	...	58.51
(Ramagiri)	...	...	Gumma	...	56.84

Vizagapatam district.

Average for the Agency tracts			...	...	...	59.85
Above average.			Below average.			
Nowrangapur	...	65.55	Padwa	...	...	59.36
Jeypore	...	75.20	Rayaghada	...	...	47.32
Koraput	...	63.58	Bissameuttack	...	...	51.89
Malkanagiri	...	65.69	Gunupur	...	...	48.30
Pottangi	...	61.76				



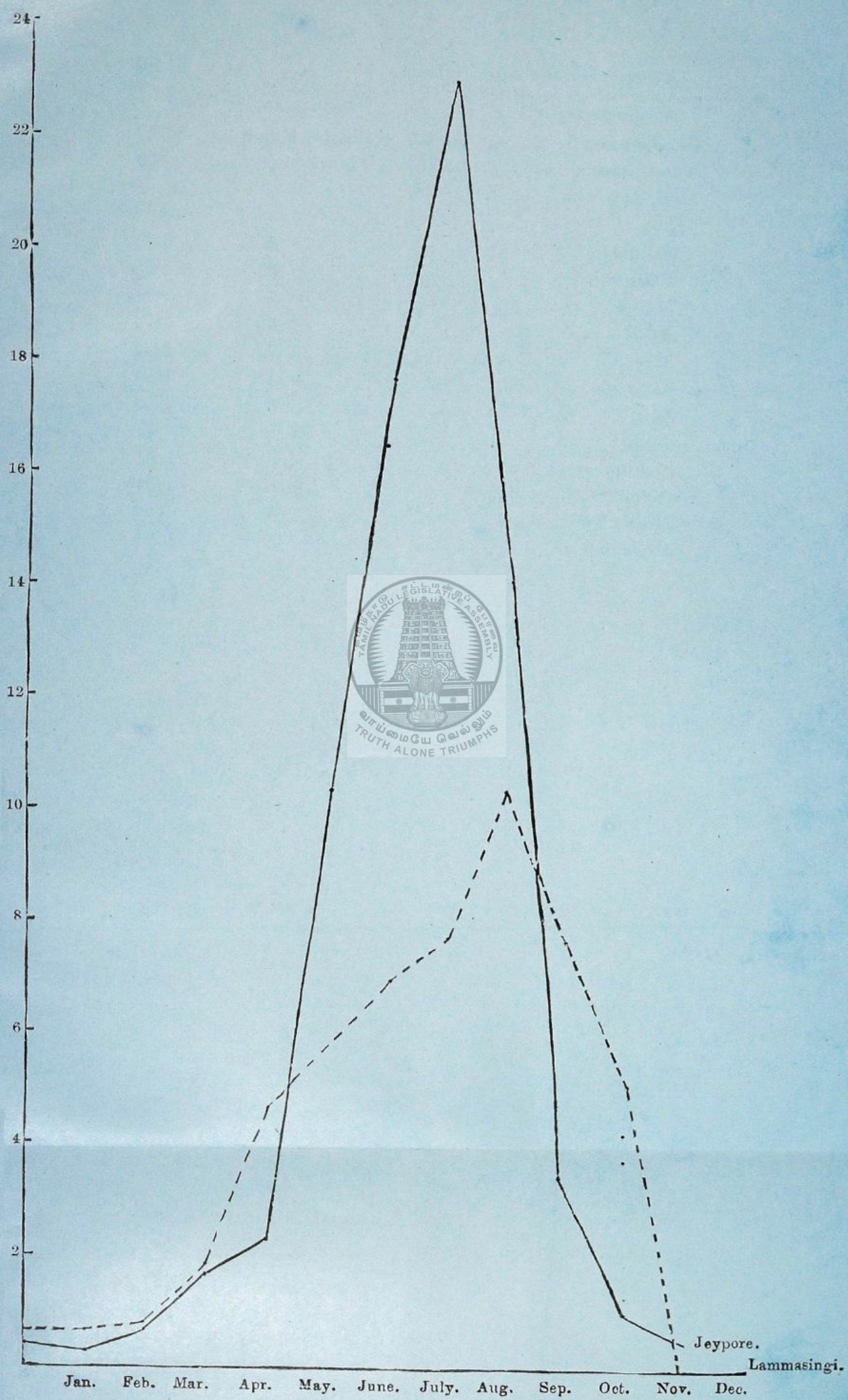
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East Godavari district.

Average for the Agency tracts				...	...	51.80
Above average.				Below average.		
Chodavaram	...	56.03		Bhadrachalam	...	44.92
Yellavaram	...	53.75		Polavaram	...	50.09
Venkatapuram	...	54.23				
				Jeypore.	Lammasingi.	
January	...	...	...	0.35	0.64	
February	...	...	...	0.26	0.61	
March	...	...	...	0.65	0.68	
April	...	...	...	1.68	1.74	
May	...	...	...	2.25	4.54	
June	...	...	...	10.37	4.88	
July	...	...	...	17.67	6.89	
August	...	...	...	23.22	7.59	
September	...	...	...	14.16	10.61	
October	...	...	...	3.30	7.51	
November	...	...	...	0.79	5.62	
December	...	...	...	0.42	0.11	
Total				...	75.12	51.70



Graph showing average rainfall of  
JEYPORE = Straight line ; LAMMASINGI = Dotted line





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While there is no very great difference in rainfall at the different stations mentioned in the Ganjam Agency, there is considerable variation between those of Vizagapatam Agency due to the configuration of the country.

(2) *Distribution.*—The rainfall brought by the south-west monsoon, during the months of June to September, is heaviest on the western side of the line of ghats but there the rainfall during the north-east monsoon is more scanty. On the other hand the eastern slopes receive less rain during the south-west monsoon, but more during the north-east. The rainfall figures and graphs of Jeypore and Lammasingi shown below make this clear. Jeypore lies on the 2,000 feet plateau, just below the western edge of the Eastern Ghats, where they rise to the 3,000 feet plateau and is practically surrounded by hills to the north and west. These hills largely contribute to its heavy rainfall. Lammasingi is on the eastern edge of the plateau in Gudem taluk and therefore receives more of the north-east monsoon.

It is therefore apparent that although the total amount of rain received on the western side of the ghats is more than on the eastern side, the distribution on the whole is better on the eastern side. In Lammasingi there is an average monthly rainfall of over 4" for a period of seven months from May to November, while the rainfall at Jeypore registers over this figure for a period of only four months (June to September).

The statement below gives the average monthly distribution of rain at various stations in Ganjam, Vizagapatam and Godavari for the number of years mentioned.

Statement showing the average rainfall from 1906 to 1926 in Ganjam, Vizagapatam and Godavari Agencies.

Months.	Vizagapatam Agency.										
	Jeypore.	Malkanagiri.	Nowrangapur.	Koraput.	Padwa.	Pottangi.	Lammasingi.	Anantagiri.	Rayaghada.	Gunupur.	Bissam-outack.
January ..	0.35	0.18	0.35	0.25	0.30	0.28	(A) 0.64	(B) 1.4	0.64	0.36	0.42
February ..	0.26	0.17	0.47	0.19	0.15	0.28	0.61	0.10	0.66	1.02	0.66
March ..	0.65	0.19	0.64	0.84	0.51	0.60	0.68	1.01	0.72	0.77	0.94
April ..	1.68	1.71	1.64	1.50	2.60	3.12	1.74	3.00	2.23	2.65	2.21
May ..	2.25	1.72	2.74	2.38	3.68	3.99	4.54	4.3	2.89	3.16	3.66
June ..	10.37	10.07	9.41	8.28	8.67	8.35	4.88	3.9	6.98	6.96	7.62
July ..	17.67	18.10	16.23	14.80	12.70	11.09	6.89	4.9	9.03	9.18	10.46
August ..	23.22	19.43	20.28	18.77	14.49	13.40	7.59	4.1	10.93	10.41	12.55
September ..	14.16	10.88	9.45	10.98	10.49	11.27	10.41	8.4	8.37	8.52	8.49
October ..	3.80	3.43	2.97	3.06	4.05	6.86	7.51	5.6	3.61	3.65	3.49
November ..	0.79	0.85	0.85	1.12	1.21	2.50	5.02	2.6	0.99	1.31	1.28
December ..	0.42	0.14	0.45	0.41	0.47	0.55	0.11	..	0.28	0.34	0.46



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Months.	Ganjam Agency.					Godavary Agency.				
	Dharingabadi.	Balliguda.	Udayagiri.	Ramagiri.	Gumma.	Polavaram.	Chodavaram.	Yellavaram.	Venkata- puram.	Bhadrachalam.
January ..	0.45	0.57	0.71	0.47	0.41	0.44	0.56	0.58	(C) 0.41	0.34
February ..	0.55	0.81	0.86	1.02	0.79	0.31	0.47	0.52	0.52	0.26
March ..	0.81	0.79	1.19	1.15	0.75	0.46	0.95	0.79	0.52	0.42
April ..	2.05	1.47	2.47	2.66	2.22	2.45	1.84	3.27	0.93	1.35
May ..	3.83	2.34	4.26	5.70	3.39	2.68	3.56	3.05	1.76	1.33
June ..	8.95	9.87	8.43	9.34	7.64	7.96	7.50	7.08	6.67	7.55
July ..	11.53	15.35	11.25	11.19	10.49	11.08	10.73	10.02	16.33	11.83
August ..	12.99	16.42	10.63	11.98	12.10	8.27	9.49	9.26	12.58	10.02
September ..	9.22	10.56	10.07	10.65	10.58	7.27	10.25	10.50	9.42	9.82
October ..	5.55	4.36	5.95	6.67	5.92	6.80	7.24	5.79	3.84	3.07
November ..	1.96	0.76	2.08	2.57	2.13	2.29	2.92	2.67	1.12	0.94
December ..	0.45	0.39	0.41	0.28	0.39	0.09	0.50	0.19	0.07	0.36

(A) Average for 13 years from 1915 to 1927.  
(B) Average for 7 years only from 1921 to 1927.  
(C) For 14 years only.

Jeypore, Malkanagiri and Nowrangapur on the 2,000 feet and 1,000 feet plateaus have all a similar rainfall distribution, while Koraput near the western side of the 3,000 feet plateau is very similar. Further east, Padwa, and Pottangi rainfall is better distributed, each having five months in the year with over 4" rainfall. Anantagiri rainfall is low being under 40" per annum while distribution is similar to that of Lammasingi. Rayaghada, Bissameuttaek and Gunupur on the lower elevations have all a similar rainfall with the greatest amount falling in the June to September period.

In Ganjam Agency the rainfall distribution is more or less similar. Balliguda with a total of 64.17" per annum has the bulk of its rain from June to October, these five months showing over 4" rainfall. Next comes Ramagiri with 63.68", but with a better distribution, six months—May to October—showing a 4" rainfall per mensem. Udayagiri has also a fairly good distribution and is similar to Ramagiri but with a somewhat smaller total. Dharingabadi and Gumma have a distribution similar to Balliguda, but the total amount is less.

In Godavari Agency, Polavaram, Chodavaram, Yellavaram and Venkata-puram all lie between 50"—60" total rainfall, while Bhadrachalam totals only 45". Distribution during the year is very similar to that of the rest of the Agency, the period June-October having the greatest proportion of the rainfall.

Most of the individual rainfalls show that the months of January, February, March and December are practically dry. The average figure shown in these months is the result of comparatively heavy and stray showers, which cannot be depended upon regularly. Rain in April is more certain, but even in this month, these are some years where it is little or none. May is a surer month for rain than April, but even in May in some places, the rainfall is very varied in amount from year to year. November





PHOTO No. 1.

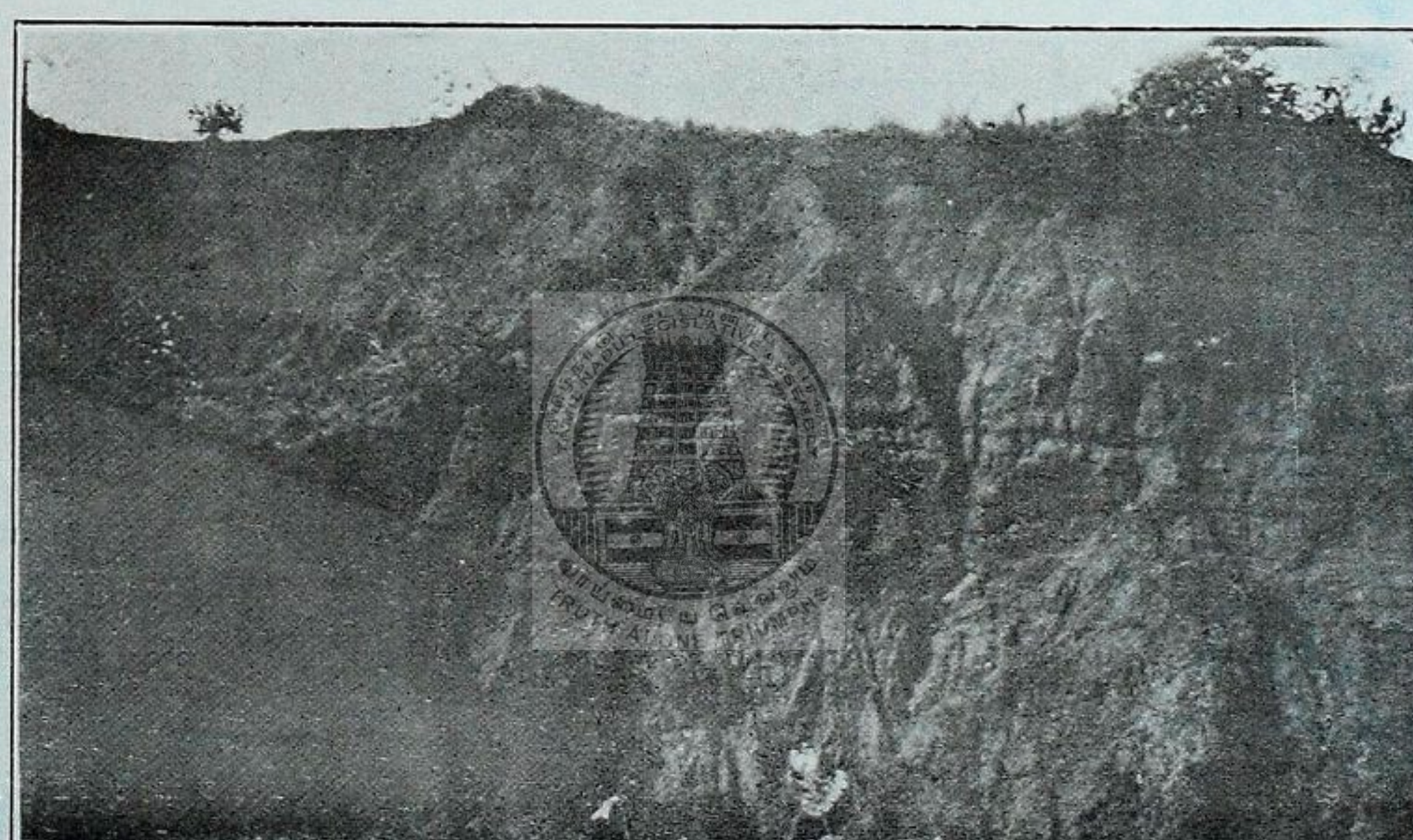


PHOTO No. 2.



PHOTO No. 3.



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is also a month of insecure rainfall and although in some years it is comparatively heavy, yet in others there is none or such a small amount as to be of little benefit.

Under these conditions therefore, dry weather can be counted upon during December, January, February and March. The rainfall of April and November is problematical and even May in some years is short. The five months, June to October, are generally reliable from the point of view of rain. This question will be discussed further in connection with the suitability of crops.

(5) SOILS.

The soils vary very considerably both in depth and physical properties, but although in cases small areas of black and grey soils appear, the greater portion consists of red loamy sands, and sandy loams which in places incline to gravel and in others to clay.

The hills appear to have been at one time covered with laterite but this laterite layer has now been washed into the valleys filling them up and giving broad and comparatively level areas of cultivable land with hills of various sizes and more or less rocky in appearance standing isolated or in groups. In the centres of the valleys, there is generally found a considerable depth of soil, but towards the hills the depth is less. In each valley one or more small streams wend their way in tortuous courses cut out of the soft soil and the water generally runs at considerable depths below the present ground level. The beds of some of these streams are easily 20 feet below ground level and the sides afford excellent opportunities of studying soil sections.

Photographs (Nos. 1 and 2) showing the stratification of these water-laid valley soils are appended.

Some of these streams have their sources in springs, others again have no definite source but are fed by water oozing out of the sides and bottom of the channels. Some are perennial, while others dry up during the dry weather.

Even in the valley land, however, one is not always certain of the depth of the soil. Outcrops of rocks there are a certain indication that at some distant period that portion had once been a peak, but owing to the filling up of the valleys it is now practically flush with the valley lands. Near outcrops of rock therefore one is almost certain to find that the depth of the soil is less and partially laterised rock is to be found at no far distance below ground level. I append a photograph (No. 3) showing laterised rock in a shallow pit dug at the roadside for road material near G. Udayagiri. Photo No. 1 was taken only about 100 yards away. The soil surface on the top was even and unbroken, and had a gentle slope towards the river where No. 1 photo was taken.

The soil on the hillside is generally thin. It either overlies slab rock or is covered with boulders of various sizes. Where the hillsides are not under podu, or shifting cultivation, there is a growth of jungle, some of which is fairly good forest and the remainder merely scrub and grass. In parts of Koraput, Pottangi and Padwa, there is very little jungle on the hillsides at all and the country looks very bare. In most other parts, jungle of sorts makes a start until the hillman thinks that the soil has sufficiently recovered from former cultivation and wash. When this point is reached, the scrub is cut and burnt and the land cultivated for a year or two until such time as



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the yield of crop decreases to such an extent as to make it unprofitable for further cultivation.

The soils are generally light in texture and easily drained. In cases there are layers of gravel which act as very efficient drains. In some cases drainage is too good, especially where perennial crops are grown with a poorly distributed rainfall. Black soils are more clayey and are preferred to red soils for ordinary cultivation purposes, but the area of black soil is comparatively small.

#### (6) CROPS.

The Agency tracts are rich in the variation of crops, which can be grown. These are enumerated below with short notes on their cultivation:—

(a) *Cereals*.—Paddy, ragi, cholam and small millets like samai.

Paddy is grown in specially levelled and bunded fields. In some cases these fields are situated in the beds of streams and the water of these is used for flow irrigation. Transplanting is in vogue in places and in a few instances two crops are grown per annum. Where only one crop is grown, the fields are allowed to lie under water for the remainder of the year and would appear to give every facility for mosquito breeding.

In the higher paddy fields where no irrigation is given, the fields are bunded to hold up a sufficient amount of rain water to grow the crop. In these 'dry' fields the seed is broadcasted and no transplanting is done. These paddy fields are practically the only places where crops are grown continuously year after year and consequently have to receive all the manure which by design or more often by chance is conserved.

Levelling of the field is done by a small implement called 'kurudu' and, as will be seen from the photographs (Nos. 4 and 5), is made of wood and worked on the same principle as a buck-scraper. The land is first ploughed before being shifted by the 'kurudu'. The photos give an idea of the country round G. Udayagiri.

Ragi, cholam, etc., are grown as dry crops under the prevalent shifting cultivation system.

(b) *Pulses*.—Red-gram, horse-gram, green-gram and beans are all grown dry under the same system as the cereals. No definite rotation of pulses with cereals seems to be followed.

(c) *Industrial and other crops*.—*Tea*.—A small area of tea was growing at Anantagiri, but no effort was made to pluck such leaf as was produced or to manufacture it. I do not consider that under the conditions there any hope of tea becoming commercially successful under such a low rainfall can be held out.

*Rubber*.—Ceara rubber was found in Jeypore, but no Hevea was seen. At the present time, Hevea is the variety mostly exploited commercially and it is possible that round Jeypore Hevea-growing would stand some chance of success. At the present time, however, the future of the rubber industry is so uncertain that without figures of yield and other data to guide one it is impossible to predict success. If rubber is to be the subject of experimental work, I would strongly advise that all young plants be budded from high-yielding mother-trees. This practice of budding from selected mother-trees is fast becoming the practice in all rubber-producing countries.

*Cotton* is grown on a small scale in R. Udayagiri taluk at the lower elevations. It is spun by Khond women and woven by Panos, but the



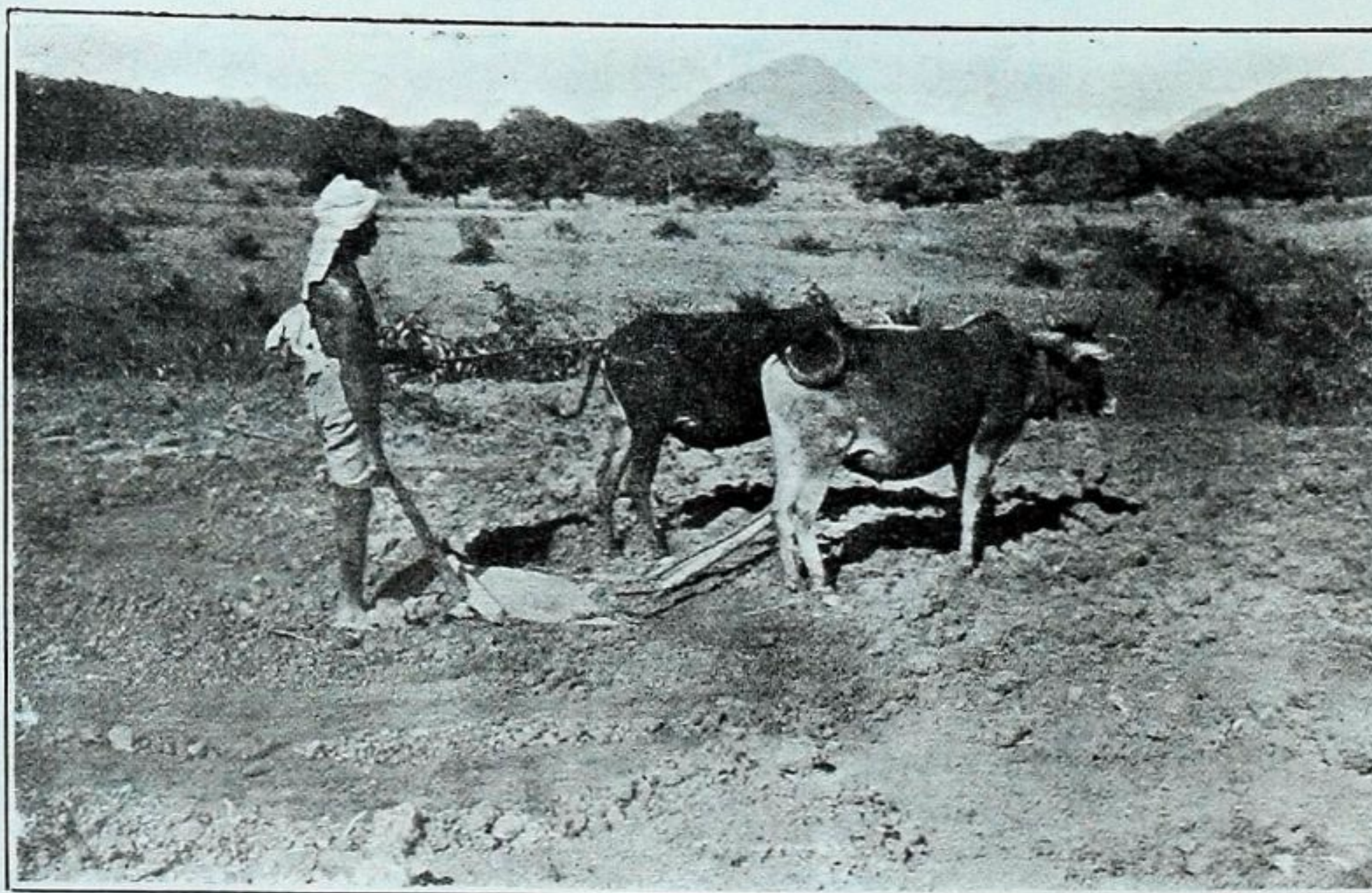


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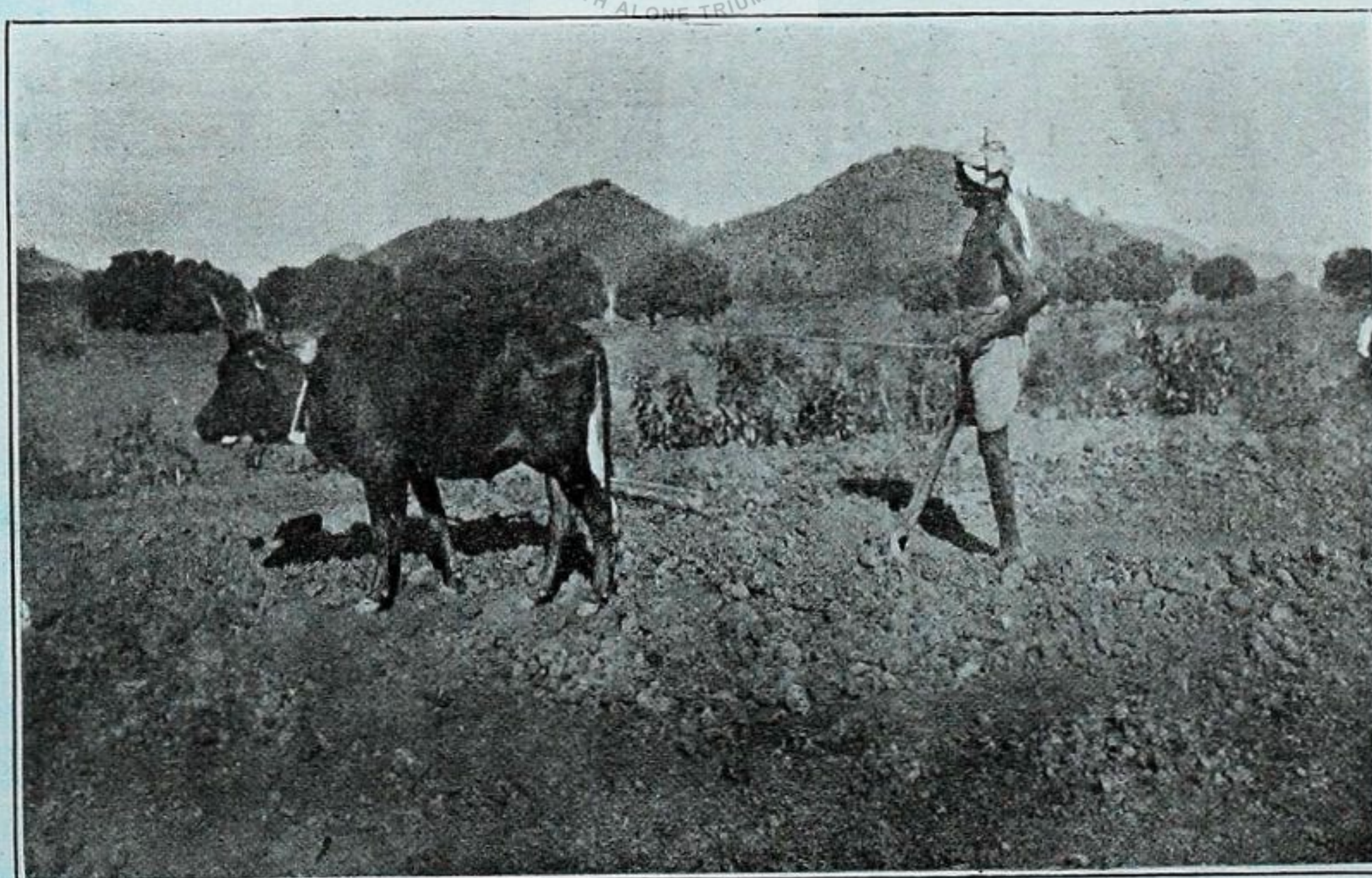


PHOTO No. 5.



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amount so grown and utilized is said to be small. The large bulk of the yarn used in weaving is imported already spun.

*Tobacco* is widely distributed and grown mostly for home consumption. Each grower only produces a small quantity to meet local needs and even then tobacco is imported from the plains especially into Ganjam. A good crop was noted near Lammasingi at Rintada.

*Arrowroot, ginger and turmeric* are also widely grown. The cultivation of turmeric in the Ganjam Agency probably receives more attention than any other crop. It is planted about 9 to 12 inches deep and is covered with a layer of leaves to a depth of 4 to 6 inches. Thus mulch rots away during the rains and during the following dry weather the land is weeded and another mulch of leaves to the same depth as before is applied. At the end of the second year the crop is harvested and sold for export.

*Sugarcane* is grown only on a small scale. Without irrigation and good manuring this crop cannot be economically grown.

*Vegetables*.—Potatoes, sweet potatoes, tomatoes, beet, carrots, cabbage, cauliflower, turnips, brinjal, etc., are grown in many gardens, e.g., Anantagiri, Koraput, Jeypore, G. Udayagiri, Balliguda, etc., and with care and attention grow well.

(d) *Fruit*.—Oranges, tight and loose skins, limes, lemons, citrons, pomelos are all grown in various places. Peaches, plums, mangoes, jack, guava, custard apple, fig (a *ficus* boxburgh was seen at Balliguda) are all found. Straw-berries have been planted on Bodigumma hill along with some peach and plum grafts. An apple tree was seen at Anantagiri, but up to the present it has never borne fruit. Coffee was found in various places under estate conditions at Anantagiri and Jeypore and odd groups of trees in several places in Gudem taluk, Anantagiri, G. Udayagiri and Balliguda. Papaya was well distributed, but received little attention. Pine-apples grow well as also do plantains.

(e) *Oil-seeds*.—Of the oil-seeds, castor and niger are the most important. Gingelly and mustard are also found, the latter on a comparatively large scale in isolated places. Groundnut has been introduced just recently in G. Udayagiri and good crops were obtained last year. The soil over the greater part of the district is suitable for this crop.

(f) *Other products*.—Silk cotton trees (*Bombax malabaricum*) are found in varying numbers and scattered through the forests. The produce is collected where possible. The produce of mahwa and illupai is collected and used. A camphor tree was seen at Anantagiri and I was informed by the Agent to the Governor in Vizagapatam that this particular tree produces seed, and that young seedlings were found in the coffee near by. I did not observe this, but it should be investigated if anyone takes up the growing and preparation of camphor. Annato was found near Jeypore, also cashew-nuts. Myrabolams form a large item of export, as also tamarind. Lac was being experimented with at Jeypore.

It will be seen from the above list of crops and produce that the Agency is rich in the multiplicity and variety of crops which can be grown, and I shall now endeavour to work out the economic possibilities of coffee, fruit and potatoes.

#### (7) COFFEE ARABICA.

In dealing with this crop and its suitability for Agency conditions, it is advisable to compare the conditions with those prevailing in other coffee



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districts. The graph No. 3 shows the comparative rainfalls of Suntikoppa, the Shevaroyis, Jeypore and Lammasingi. Suntikoppa in Coorg is one of the best, if not the best, coffee district in South India, while the Shevaroyis is the coffee district in South India where the rainfall on the whole is lowest.

Jeypore rainfall is comparable with Suntikoppa in amount, but in distribution is somewhat dissimilar. Suntikoppa starts off with more rain than Jeypore in April, May and June and reaches the south-west monsoon peak in July. Jeypore reaches the south-west peak one month later. Being north and east of Coorg, it receives its monsoon later than Suntikoppa by about one month and its season therefore may be taken as later by that period.

Again, Jeypore being on the western side of the eastern ghats receives less of the north-east monsoon, while Coorg receives a considerable amount of rain during that time. At Suntikoppa, the peak of the north-east monsoon is reached in October, while Jeypore does not receive any considerable amount of rain then.

Comparing the Lammasingi and the Shevaroyis rainfalls, which are very similar in total amount, it may be noticed that the only really dry month in the latter district is February. In March, April and May, more rain is received than at Lammasingi. Neither of these places show any definite peak during the south-west monsoon. The north-east monsoon peak in Lammasingi is found in September, while the peak of the north-east in the Shevaroyis is found in November. This better distribution of rainfall undoubtedly tends to a longer growing period.

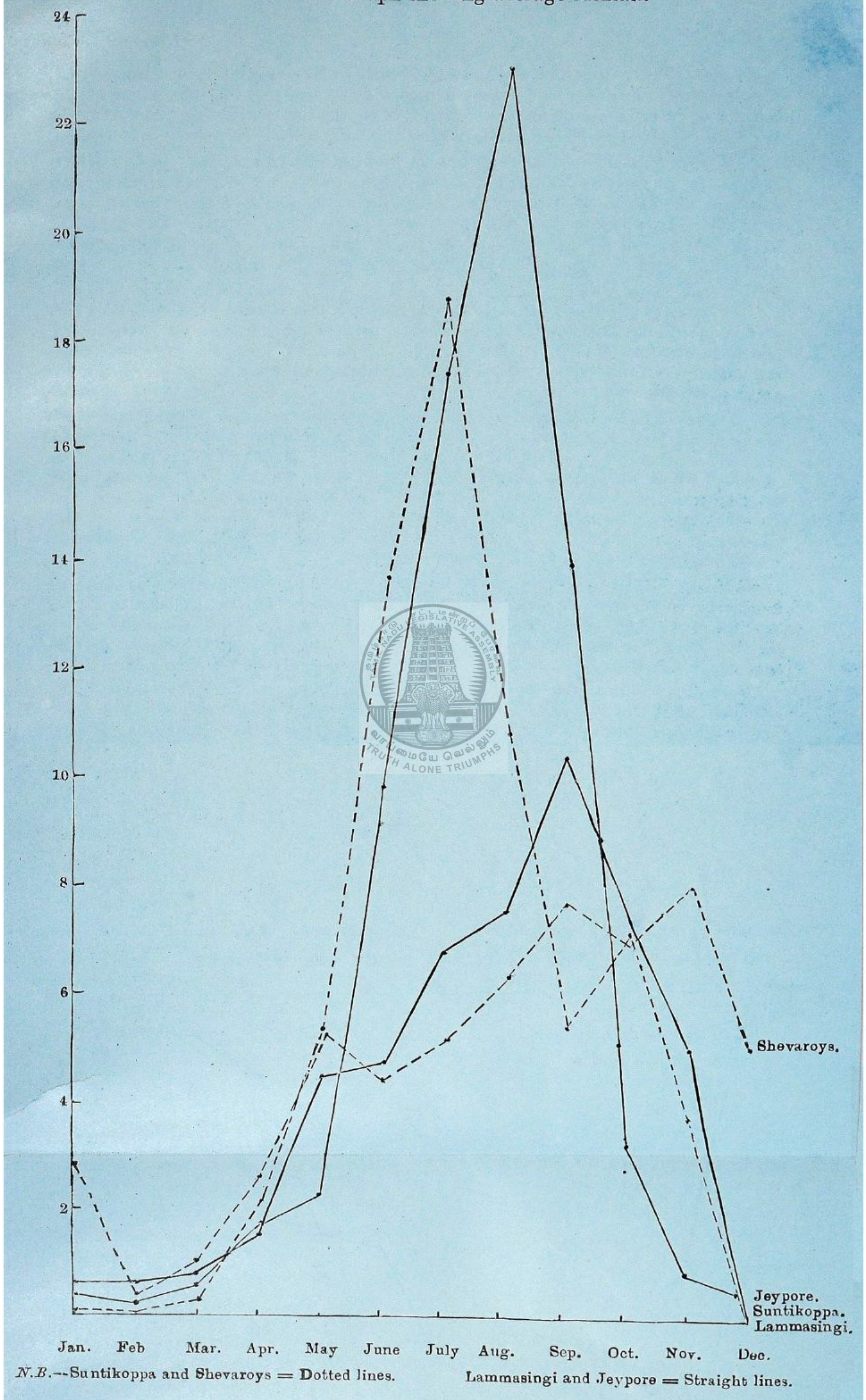
Taking the Jeypore and Lammasingi figures together, there is a distinct tendency towards a shorter period of heavy rainfall during June, July, August and September than is the case with the coffee districts further south. In the latter, the south-west monsoon appears earlier and the north-east continues later than is found in the Agency districts further north.

As relative humidity is one of the important factors in growth, it is apparent that the period of growth in the Agency tracts is shorter than that in the southern districts and therefore the facilities for the production of new wood, on which the coffee crop mainly depends, are less. Not only is this so but a scrutiny of the annual rainfall of Lammasingi shows that droughty years are not uncommon; for instance in 1920, the rainfall was only 31.70 inches, 1921—45.40 inches and in 1922, it dropped to 24.60 inches. Three such years are bound to materially affect the bushes themselves and the future of any estate.

	Jeypore.	Suntikoppa.	Lammasingi.	Shevaroyis.
January .. .. .	0.35	0.13	0.64	2.80
February .. .. .	0.26	0.18	0.61	0.30
March .. .. .	0.65	0.30	0.68	1.00
April .. .. .	1.68	2.22	1.74	2.60
May .. .. .	2.25	5.50	4.54	5.30
June .. .. .	10.37	13.62	4.88	4.40
July .. .. .	17.67	19.06	6.89	5.10
August .. .. .	23.22	10.93	7.59	6.30
September .. .. .	14.16	5.45	10.41	7.70
October .. .. .	3.36	7.17	7.51	7.00
November .. .. .	0.79	3.76	5.02	8.00
December .. .. .	0.42	0.35	0.11	2.90
	75.12	68.67	51.70	53.40



Graph showing average rainfall.





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**Temperature.**—A graph of maximum and minimum temperatures for Balliguda, Shevaroy, and the Nilgiri-Wynaad has already been given. It is exceedingly difficult to get a sufficient number of temperature records to give anything like an accurate survey of the Agency tracts, but if Balliguda (2,000 feet elevation) is taken as an example, it is seen that April, May, June maximum temperatures are much higher than those of the Shevaroy.

Temperature as well as humidity plays an important part in conditions for growth and with a higher temperature, one might expect a more rapid rate of growth. At the same time, given an equal amount of rainfall at this period, the higher temperature reduces the relative humidity, which in its turn reacts on growth.

The amount of wood produced on coffee regulates more than any other single factor the amount of possible crop, while conditions appertaining at blossom time and previously limit the actual season's crop. Even if perfect blossom conditions are present, no crop will be obtained unless there is wood to bear it. I am therefore of opinion that as conditions for growth of coffee are not so good in the Agency as they are in the Southern Coffee districts, the crop will not be so successful in the former as in the latter.

Looking at the economic side of the question, I quote figures obtained from the coffee estate at Anantagiri. The biggest crop produced on Anantagiri, was 25 tons of 127 acres after manuring and liming. This works out just on 4 cwt. per acre. This for a bumper crop, is very poor indeed; in fact an estate to be a commercial success, should nearly average this output and I know of estates in Coorg, which have averaged 5—6 cwt. per acre for a period of 10 years. Bumper crops run up to 10—12 cwt. per acre.

For the last five years, Anantagiri estate with 100 acres in bearing averaged about 5 tons parchment per annum, i.e., 1 cwt. per acre. This coffee was sold at Rs. 14 per bushel of 26—28 lb. Taking the bushel as 28 lb., i.e.,  $\frac{1}{4}$  cwt., the money return per acre amounts to Rs. 56. The present tenant pays Rs. 35 per acre for which amount the estate owner does supply planting, shade work, etc. The tenant does ordinary cultivation, pruning, etc., at a cost of Rs. 30 per acre. The total cost to the tenant therefore is Rs. 65 per acre on 100 acres amounting to Rs. 6,500. In return he receives Rs. 5,600 by way of coffee crop—a loss of Rs. 900. He makes from various fruit trees, oranges, jack, etc., a total sum of about Rs. 1,000 which clears the loss on the coffee. If it were not for other means of subsistence, the tenant could not carry on.

Working expenses and other charges are placed at a ridiculously low figure at Rs. 30 per acre. The total cost of running an up-to-date estate runs from Rs. 120 to Rs. 160 per acre, the latter with heavy manuring. It is therefore apparent that as an economic proposition, this estate does not rank high.

Round Lammasingi at Ebul, Rintada, Kinerla, etc., coffee is grown by the hillmen in small patches of anything up to 100 bushes, and considerable quantities of coffee are produced in good years. Last year was a good year and I am informed that round about Rs. 10,000 worth of coffee came into Narsapatam. Round Anantagiri too, small areas of coffee are found. At G. Udayagiri, there are some trees in one of the official's gardens in the villages as also at Balliguda. Round the guest-house at Jeypore,



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excellent coffee trees are found growing as a hedge, but the estate I inspected six miles out from there was a collection of moribund trees from which very little crop could have been taken for years.

I show below a photograph (No. 6) of Arabica at Jeypore. The trees had been cut down two to three years ago to about 3-4 feet above ground-level. New suckers had come away well and an excellent crop was picked last year. It was impossible to get exact information as to the actual amount, but an examination of the older wood showed that it must have been fairly good. This year very little crop at all was picked, while the appearances for crop next year were not too encouraging. The trees in G. Udayagiri were looking well, but as there was little or no crop this year, this is not much to go upon. Prospects for next year, as judged by wood and spike present, were not over encouraging. In both these places the coffee was grown on valley soil of great depth and well-shaded by jack, while most of the coffee in Anantagiri, Jeypore estate and Lammasingi was grown on the poorer and rockier soils of the hill-sides. It would therefore appear that better chances of success follow planting on good deep soil, which is capable of holding moisture well through the dry weather. The absence of leaf disease at Jeypore and G. Udayagiri was marked, but stray cases of borer were discovered. In Anantagiri and especially round Lammasingi, considerable damage was done by borer, while leaf disease was rife.

With the exception of Anantagiri estate, which is topped about 4 feet high, all the other coffee seen was high grown under the 'Leaning' system. This system was tried out largely in the Southern Coffee districts and for the first few years gave large crops. As soon as the lower primaries died away, however, and the main stem or stems became exposed, borer got in and large areas of coffee went out of bearing and had to be collar-pruned at ground-level, supplied up, and re-grown on the low single stem system. The very same thing is now happening in the Agency tracts, but instead of being kept low, the bushes are again allowed to grow high and in time they will be again bored. If collar-pruning on a regular system is adopted, a greater supply of young wood could be obtained in the years immediately after pruning with greater resultant crops, but the tree itself will have to be replaced in a shorter time. In this connexion, I would point out that Robusta coffee stands the high method of growing better than Arabica. It is naturally a large growing, heavy cropping tree, it more or less prunes itself, and does not get borer to nearly the same extent as Arabica. While the produce is of inferior quality yet the probable heavier yield should make up for any smaller return in price, and the fact that for the last number of years, about 1,000 tons of such coffee are annually imported into South India, shows that there is no lack of a market for it.

With the above facts in mind, I submit that on the whole there is very little hope of coffee ever becoming a paying proposition under up-to-date estate conditions. The hillman who puts out a few coffee bushes under a jack tree and takes what produce there may be, is in a very different position, as he has no overhead charges and spends practically nothing on maintenance. To him the coffee crop is an extra perquisite, which he takes if there is any, but does not miss very much if there is none. This type of cultivation might be encouraged as any crop harvested is produced at very little cost and favoured spots, which otherwise would remain idle, are utilized.



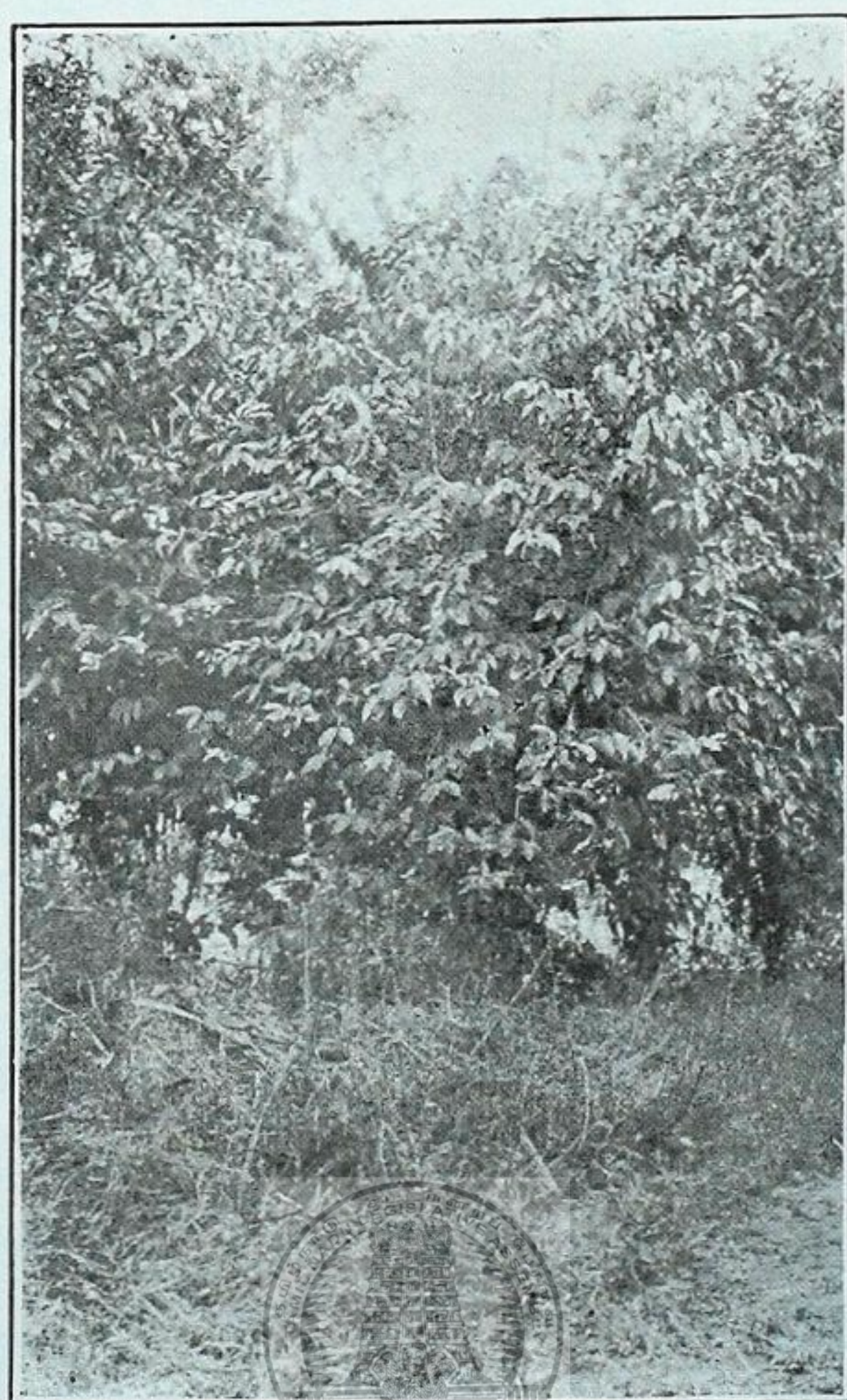


Photo No. 6.  
TRUTH ALONE TRIUMPHS

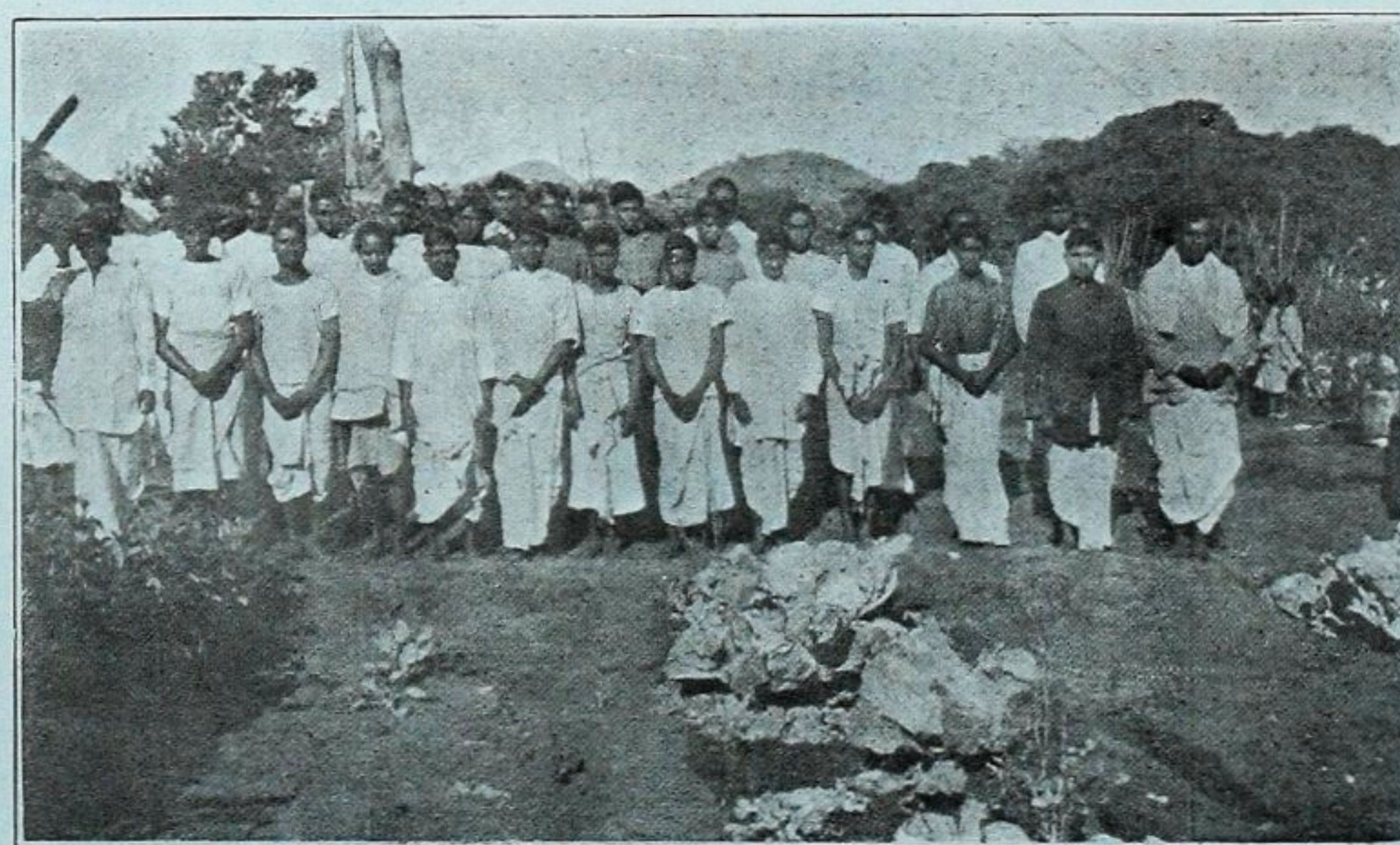


Photo No. 7.



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## (8) FRUIT.

(i) *Oranges*.—Oranges and citrus fruits generally are grown all over the Agency tracts. They require a lightish well-drained soil of about 4 feet depth and naturally well-drained. Along the water courses in the valley areas, such soils are found and of a much greater depth than 4 feet. The depth of the wet weather water table is also an important factor, for, if the water table rises above the height mentioned for any considerable period of time, then stagnation takes place and the lower roots are affected. The citrus tree develops a well defined taproot which strikes downward into the soil and lateral roots which develop sideways. Early South Africa planters realized that these oranges grow well up to a certain stage and then rapidly declined and died. It was usually discovered that the dead or unthrifty trees had encountered objectionable sub-soils. Similar effects are found with too high a wet weather water table.

I was unfortunately unable to visit the Godavari Agency or the Parlakimedi Maliahs where I understand there is a considerable area under citrus fruits mostly oranges. In the latter district, the cultivators have got the reputation of being good and it is probable that their skill is capable of meeting any demands for increased production, which may arise in the near future. As a matter of fact, I am led to believe that in good seasons there is a glut of oranges on the market at the picking season and it would therefore appear that at present, attention should be paid more to the regulation of supplies and the opening up of new markets to absorb surpluses rather than to aim at increasing the cultivation.

Orange cultivation in the areas visited is not so well developed as it would appear to be in the areas already mentioned. As an instance of the methods in vogue, I may mention one, which I investigated at Rintada near Lammasingi. The total number of trees owned by this man amounted to 120 of the loose-skin variety. They were snugly set in the valley of a small perennial stream and sheltered on all sides planted 12 feet  $\times$  12 feet apart which is very close 20 feet  $\times$  20 feet would have been none too open.

Pot-watering was done in the dry weather and this is of importance, for, while the hillman may and very often does realize the value of doing a certain operation, he is generally much too slothful to put it into operation. The fact therefore that these oranges were being pot-watered brings to notice the fact that for best results, irrigation is necessary. Investigations in Ganjam also showed that irrigation of some sort is desirable.

The reason for this is not far to seek, the long drought generally experienced from about November-April or May is sufficient to account for it and it is therefore necessary in growing oranges on an estate scale to arrange for irrigation sources before commencing operations.

The orange grower mentioned above, picked five bandy loads averaging about 3,000 oranges each, i.e., a total of 15,000 oranges off his 120 trees or an average of 125 oranges per tree. The outside trees, which had room to spread, were, according to the owner, very much better than the inside ones and yielded 200—300 fruits each, with a corresponding reduction in the number of fruits from the inside ones. My information was that the crop sold at Rs. 2 per 100 or a total income of Rs. 300. This works out at Rs. 25 per mensem. The total area under oranges was under half an acre.



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To get the same return from coffee at Rs. 56 per cwt., a crop of over 5 cwt. per half an acre, i.e., over 10 cwt. per acre would be required. The prospects of oranges therefore at the price mentioned, offer greater possibilities than coffee, but the question of packing and transport is one which requires greater attention and organization.

Prices of the oranges vary considerably from 8 annas per 100 to as high as Rs. 10 per 100. I was informed that at Christmas last year, picked loose-skin oranges cost Rs. 11 per 100, but the crop last year was below normal in that particular area. It is practically impossible to obtain figures as to actual production.

All over, my opinion is, that there is room for the development of the growing of citrus fruits provided marketing is organized. In almost all valleys on the higher plateaus there are small streams along the banks of which small citrus gardens might be planted. The question of irrigation will have to be enquired into if large areas are put down as it would be possible by varying the times of irrigation to control to a certain extent the period of blossoming and the period of fruit picking. By such means the time during which oranges are available, might be considerably lengthened. If, however, each hillman has only a small group of orange and other citrus trees, watering could be done by pots as and when required. Collection of the produce, grading and marketing might be done co-operatively.

As regards other fruits, peaches and plums were found in several places in Vizagapatam and Ganjam. The difficulty with such fruits is that they are more difficult to handle than citrus fruits and at the present stage of development, it would undoubtedly be difficult to get them marketed before they have lost their bloom.

(ii) *Mango*—is the most common fruit found in the hills. Large areas are under seedling mangoes but very few grafts are found. I was led to understand that certain graft trees tried near Lammasingi fruited about August. If this is so, prospects for these are good as they would appear on the market when other sorts are almost impossible to obtain. Here again, however, the prospect is limited owing to transport and it would be only in such places as Lammasingi, which is comparatively near the plains and railway communications that possibilities exist.

(iii) *Pine-apples*—grow well and their cultivation could be improved and intensified especially in places near the plains and markets.

(v) *Straw-berries*.—A small plot of straw-berries was laid down at Bodigumma hill with the object, it is stated, of supplying Calcutta. Bodigumma is two miles from Lingagoda which is seven miles from G. Udayagiri. From there to Russellkonda is 27 miles including the Ghat road. From Russellkonda to Berhampur, the nearest railway station, is 50 miles, a total of 86 miles—a considerable mileage of which consists of walking tracks and ghat road. I consider this scheme almost impossible of execution in an economical way.

I submit therefore that only citrus fruits are worthy of particular attention, under the existing conditions, with the possible addition of mangoes if the fruit ripens at such a time that a high price can be obtained to pay for the extra cost of transport,



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No mention has been made of pests and diseases. Several borer holes were noticed in some orange trees while die-back of tips was found all over the district. Such die-back is most probably due to mildew attacks, but it was impossible at the time of my visit to state its cause definitely. I would point out, however, the possibilities of increase of pests and disease if large areas are laid down to any particular crop.

(9) POTATOES.

In potatoes we come to an annual crop, which has definite possibilities under the conditions of climate and soil. The best sample I saw was at Koraput Jail, where night-soil is largely used in the production of vegetables of many kinds for the use of the prisoners. At all other places, where samples were inspected, the size was small. At Jeypore, Chatrapur, G. Udayagiri and Koinjore, the potatoes were small in size and were in many cases badly damaged by a grub of some kind. Specimens of this grub were not obtained but malis and others informed me of it, while its depredations were evident on the tubers. It may possibly be the grub of the potato moth, but this, I may say, is only my opinion and requires investigation. Holes about the size of No. 4 shot were bored in some cases right through the potato allowing the entrance of white-ants, which in themselves may do a considerable amount of damage.

Yields run about 4 or 5 fold to one. Out of  $1\frac{1}{2}$  bags planted at Koraput with seed from the Government Potato Farm at Nanjanaad (11 miles from Ootacamund),  $7\frac{1}{2}$  bags were harvested. Yields at G. Udayagiri were about 4 to 1. It is evident that if yields are to be increased, the cultivation and manuring must be more intensive than at present. At the same time, the question of transport of manures and transport of potatoes produced has to be borne in mind. Potatoes require an acid soil and respond to heavy manuring. A dressing of 10 tons cattle manure plus 4 cwt. fine bone meal plus about 5 cwt. wood ashes per acre should be useful and economical. Bones are available in plenty in the district and if collected in centres, disintegrated, could be supplied to cultivators at reasonable rates. Cattle manure could be produced in greater abundance if only a little more care was taken in conservation. Litter should be used under the cattle in order to collect the urine and so increase the amount of manure available. Wood ash is available in quantity and could be supplemented by imported concentrated potash manures if the supply is not equal to the demand. I am informed that potato cultivation at Pulwani on the Orissa side of the border is much more advanced than in the Agency tracts. The cultivation is spreading into the district round Koinjore and samples of medium-sized but fairly clean tubers were inspected from that side. The potatoes are said to be marketed round Russellkonda and on to Berhampur, but the total amount produced is reckoned to be small.

Potatoes are generally planted in September-October and harvested about December-January. I would suggest trying earlier planting in order to make the best use of the rainfall and to decrease the chances of drought in November and December stopping growth and so reducing the yield. By planting in ridges across the slope of the land, the potatoes should not suffer too much from water-logging even in the wet weather of August, while wash would be at least partially stopped by the ridges.



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Sprouting of seed is practised at Koraput with good results, but difficulty is found when taking a single crop per year in keeping seed over from one harvest season till the next planting season. It is therefore usual to grow a dry weather crop under irrigation mainly for the production of seed. In Nanjanaad, an early main crop is planted at the end of March or beginning of April and harvested about July-August. The second crop is planted at the end of August or beginning of September (not on the same land as the early crop) and harvested about December-January. It is sometimes possible by early harvesting and forced sprouting in a warm room to have seed from the early crop ready for planting down the second crop, but this could not be done in the Agency districts owing to the higher temperatures and lower rainfall in the early months, preventing early planting of the first crop.

The holding over of seed from one season to the next occasions heavy loss up to 25 per cent or more if storing is not properly attended to and therefore the system of growing a crop under irrigation for seed purposes should be encouraged and the main crop taken under rainfed conditions. The occurrence of frost is liable to damage later grown potatoes considerably.

The cost of growing potatoes varies very largely with the labour and with the manuring given. Cattle power is cheaper than hand labour and should be utilized. The seed rate per acre will amount to about 15 cwt. medium sized potatoes, but this varies with the size planted. The cost of growing an acre of potatoes with 15 cwt. seed at Rs. 1-2-0 per maund of 25 lb. and manuring at a cost of Rs. 100 per acre will run about Rs. 200—250 per acre. Taking the yield as 5 to 1, the total harvested will be 75 cwt. per acre, i.e., about 337 maunds at Rs. 1-2-0 amounts to Rs. 380. The profit which may be expected therefore would amount to Rs. 130—180 per acre from which costs of transport to a market would have to be deducted.

#### (10) POSSIBILITIES OF AGRICULTURE.

I have given considerable thought to the possibilities of agriculture in the areas concerned and I have come to the conclusion that annual crops, such as cereals, pulses and industrial crops, are most suited for the tracts. These are already being grown on a considerable scale. Crops, such as paddy, niger, castor, turmeric, etc., are being exported in considerable quantity to the plains. Some of the castes are comparatively good cultivators and considerable care is taken in the cultivation of some crops, e.g., turmeric, as already mentioned.

At the same time, the great bulk of the hillmen are easy-going, even to the limit of laziness, and there appears to be very little demand among them for any form of knowledge on the subject, which forms their means of livelihood. Crops are sown in May-June and harvested usually in October-November. In many cases the straw is not even removed nor kept as fodder for the cattle. The latter are allowed to forage as best they can for themselves during the dry weather while most of their owners make merry on the fermented juice of the Solopo palm. The Solopo palm yields about 3 gallons of toddy daily and my information is that a gallon is sufficient to transport four men temporarily into paradise. Although while at G. Udayagiri, I demonstrated the manufacture of jaggery from Solopo palm juice, I have little hope that jaggery-making will attract as many devotees as



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toddy-drinking. With the exception of the levelled paddy fields, which receive all available manure, no manuring is done, but when fields show signs of lack of fertility, a new area which has been fallowed for a number of years, is brought under cultivation.

I submit therefore that unless and until their methods of agriculture are more stabilized, it is little use trying to do anything in the way of instruction in improved methods of cultivation, rotation, or manuring. Two agricultural demonstrators were sent to the Agency some time ago, but both were recalled and the attempt written down as a failure.

Over the whole area, the population at the 1921 census averaged 75 per square mile. Land is relatively plentiful, and so long as this is so, I cannot see how these cultivators are to be persuaded to settle down and cultivate one particular portion of land. It is only when this happens and the cultivator is up against the proposition of getting a living out of a given area of land, that the question of making the best use of such land arises. Once this question does arise, there is immediately a demand for knowledge and it is here that the functions of the Agricultural Department commence. I consider it useless for any member of the Agricultural Department to try to impart knowledge for which the cultivators have no desire, and this really raises the question of the education of the hillmen or the immigration of good cultivators from other districts.

(a) *Education.*—It is recognized that one of the best means of education is travel, and therefore I favour emigration of the hillmen to other parts of the country. Large numbers go annually to Assam and many of them return with an opener mind than when they left. Unfortunately these are mostly of the labouring classes and few of the real land-owners go. Two of the best cultivators I met, had served a certain time in jail and undoubtedly were the better of it. Unfortunately such compulsory educational methods cannot be used in all cases, but the employment of officers with an agricultural training in the Revenue Department might be considered. Such officers with agricultural knowledge and the authority of the Revenue Department might do some good and would stand a better chance of disseminating knowledge than an Agricultural Officer without such authority.

There remains also the possibilities of introducing agriculture as a subject in schools especially in Teachers' Training schools. Taking for example, the Elementary Teachers' Training School at G. Udayagiri, where 40 students are in residence (20 students per annum on a two-years course) it might be possible to introduce some form of agricultural training there. Photo No. 7 shows a group of these students in the school garden at G. Udayagiri. Behind the school building itself, there is an area of 40—60 acres which could be obtained and utilized as a small demonstration and training farm. If run under a good agriculturist, it would not only serve as a working example to students, but also to surrounding ryots.

The students work 25 hours per week divided into 30 periods from 10—30 a.m. to 1 p.m. and from 2 p.m. to 4—30 p.m. per day, Saturdays and Sundays excluded. It might be possible to work in three agricultural lectures and two practical classes of one hour each on week days before 10—30 a.m.



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and a practical class of three hours on Saturdays or Sundays. In this way, a certain amount of practical knowledge would ultimately permeate to the villages through the schools.

Two agricultural men would be required to run a farm of this sort and to do the necessary lecturing. The man in charge would have to be specially good as he would not only have to lecture, but also experiment with crops and rotations both in dry lands and paddy lands. Oriya is the official language in the district and the students are about half Oriya and half Khond. All teaching, therefore, has to be done in Oriya.

At Serango there is a similar school for the training of teachers for the Parlakimedi Maliahs. The students are partly Savara and partly Oriya and the official language is Oriya. In Jeypore there is a similar school where the students are Oriyas and Parasas taught in Oriya, while at Bhadrachalam mostly Telugu students are taught in Telugu. Whether there are possibilities at the three last mentioned schools for a scheme as suggested for Gumsur Udayagiri, I am unable to say.

The main object of such a scheme is to try to teach and interest the teachers to such an extent that their knowledge in turn will gradually permeate to the villages through the elementary scholars taught in the village schools. I do not consider it of much value to teach agriculture in middle schools as the scholar in the middle school is seldom going back to the land and any agricultural education given to him will be practically lost. On the other hand, a corps of rural teachers trained in agriculture, or at least having some practical and theoretical training in agriculture, should in an agricultural district, have at least some effect in creating interest and a demand for more knowledge, not only through the schools, but also through their intercourse with the adult cultivating population, the parents of the children in the schools.

The attitude of the hillmen towards education in general, however, is aptly illustrated by the case of the village teacher, who received one day a deputation of parents. The latter demanded half of the teachers' salary on the grounds that while the teacher supplied the teaching they supplied the children. If they declined to send their children to school, the teacher would lose his job and the only equable arrangement of the matter therefore was a fifty-fifty one.

(b) *Immigration of plains cultivators.*—While in some districts, there is a considerable amount of immigration, e.g., in G. Udayagiri where the population is 50 per cent hillmen and 50 per cent plainsmen, on the whole there is little immigration of actual cultivators. Even although thousands of plainsmen emigrate annually to Rangoon and other places, yet they seldom attempt to penetrate into the Agency tracts. Authorities tell me that this is mainly due to their fear of malaria. In pursuing my investigation about the sale of Agency oranges in Vizagapatam bazaar fruit-shops, I was definitely told by one man that loose jackets were not handled by him because, as they were grown in a malarious district, they carried malaria. On attempting to disprove this theory, several interested by-standers agreed with the shopman and supported his statement. A fearsome respect for the Agency was indicated.

(c) *Malaria.*—Malaria, therefore, may be considered as one of the most potent factors in the backwardness of the Agency. It is almost certain



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that plainsmen would have emigrated there and developed the country to a larger extent than is found at present were it not for their dread of this scourage. Knowing something of the great work that has been done in some of the southern planting districts in the elimination of fever carrying mosquitoes, I was desirous of obtaining information about the actual carrier (or carriers), its habits, and its breeding places, but although I approached several of the medical men on the spot, very little information was forthcoming.

I take it that the breeding places are in the streams and the paddy fields through which these flow. The bunds of the paddy fields hold up a certain amount of water, making small ponds where mosquitoes breed. The numerous small streams with their deep and tortuous courses will prove most difficult places to clear up by direct attack against the larvæ by kerosene, etc., and I therefore would draw attention to the work of Willcox in Egypt and d'Herelle in the Argentine on this problem. Willcox states:

"That the Nile valley from Aswan to the Mediterranean is immune from malaria, but that there are places on the edge of the cultivation like Ismailia and the Kanka desert farm where malaria has been found, but they are not in cultivated Egypt and there are localities, which have been cut off from the cultivated area, where malaria will be found, while cultivated Egypt is immune. It is explained that the key to this immunity lies in the fact that mosquitoes must get the malaria germs themselves before being capable of passing on the infection and that there must be something in all leguminous plants especially in certain kinds of clover which makes mosquitoes immune and therefore they cannot pass on the germ.

There is no other reason, which can account for the outbreaks of malaria at Ismailia and Kanka desert farm where clear water oozes up in the sandy deserts which are devoid of the rich leguminous vegetation of the cultivated Nile valley.

This theory is supported by Dr. d'Herelle, who in a recent publication, emphasises the fact that the greater portion of the Argentine is free from malaria though mosquitoes abound in these regions and men with malaria from malarious districts are frequently found. In all the free regions there is a wild plant called *Trobol de Olor* (scented clover). Flowering takes place during the critical period of malaria from the beginning of summer to the end of autumn. The highly scented blossoms are frequented by the malaria mosquitoes, which feed upon the juice containing coumarin, a sugar syrup, which has an agreeable odour and is contained in all plants of the genus, and the most notable fact in this connexion is that *Trobol de Olor*, is not present in malarious districts.

To malaria-infected countries generally the advice of Sir William Willcox is that it would pay any malaria-ridden country to write to Washington and get information from people, who have first-hand information and are ready to give it, to buy the hardy sweet clover from local seedsmen in the Western States and begin operations in suitable gardens and nurseries, to send specialists to collect the seeds of the *Trobol de Olor* and local clovers in the Argentine; to get the wild clovers that grow under lupins and in the open in Northern Europe and South Egypt; to get seeds of the fodder crops of Egypt; and to get the coumarin beans and seeds from Guiana and Brazil and to plant them. He concludes by saying:

'that Malaria is such a terrible curse and its suppression over face of any country by changing malaria mosquitoes into benign ones would be such a blessing that no one responsible for regions where malarial fevers are the common heritage of the people should find it possible to contemplate cultivated Egypt's immunity from malaria and shrug his shoulders and do nothing'."

I apologise for quoting at such length but from any point of view the subject is a fascinating one and from an agricultural point of view doubly so, not only from the malaria suppression side, but also from the point of view of production of cattle fodder.

#### (11) LIVESTOCK.

Cattle are general all through the Agency tracts and practically every village has got its herd. During the wet weather, when feed is plentiful, they are in good condition, but during the dry weather, when food is scarce,



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they pass through a very bad time. Little or no trouble is taken to conserve excess grass or even the straw from the grain crops, to help them through the dry period.

The cattle on the whole, are small badly bred and poorly fed, but the country so far as I can see, is a very suitable cattle breeding one. Almost similar in elevation to the Mysore cattle country, there is no reason why cattle equally as good, could not be reared with some care and attention. On the hill sides, especially just after podu cultivation, grass is plentiful and on the 3,000 feet plateau between Pottangi and Koraput there is very little growth of jungle which might in time interfere with grazing areas.

With the opening up of the country by roads and the possible development of such forests as there are, an increased demand for good bullocks for transport purposes may be expected. Even if there is no demand on the hills, yet export of good cattle to the plains and further afield, would probably be a paying proposition. At present transport in the interior is mainly by pack-bullock and the load is varied according to the size and condition of the animal. With the improvement of roads, cart transport will be increasingly used for such work. In fact on the Jeypore ghat, transport is mainly done by buffaloes. These are bred mostly on the Parlakimedi side and appear to be out of country or cross-bred dams by Delhi or Muree sires. They are strong boned, well built, weighty animals and stand up to ghat work well.

To improve Agency cattle, a stocky, medium-sized, thickly-built animal is to be preferred, and I consider a medium-sized Kangayam would be more suitable than either the Mysore or the Nellore and would be faster than the Scindi. I would suggest that a number of Kangayam bulls be placed at different centres in each district say six in the Ganjam area and ten in the Vizagapatam district in selected villages. All other males capable of breeding in these villages would have to be castrated and the stud-bulls changed over every two years to prevent inbreeding. Supervision of these stud-bulls could be done by the Veterinary Assistants attached to the different districts.

*Feeding.*—In order that stock may not depreciate to the same extent as at present during the dry weather, attention will have to be paid to conservation of fodder during the season of plenty. The hillsides are covered with grasses, most of them coarse which could be cut and made into hay or silage. Rotation of crops in the cultivated valley lands could be arranged in such a way that a considerable amount of fodder is produced for dry weather keep and if the question of the importation of leguminous crops for anti-malarial work is investigated, such plants as produce most fodder should be given preference.

Although malaria is reported to be present all the year round, I take it that a certain proportion of cases are relapses and that actual infection takes place when temperature and humidity give proper conditions. This will probably continue from about April or May onwards, but on this point I am open to correction. The point I want to emphasize is, that these legumes must be in flower at this period and in consequence will have to be grown under irrigation during the dry weather. It is therefore necessary that they be grown in all paddy lands commanded by a perennial streams and on the banks of the streams themselves where possible. Such green



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fodder as is available from these sources during the dry weather will form a useful addition of green material to the available cattle food preserved as hay or straw or silage.

In addition, I would suggest the introduction and trial of Kikuyu and Rhodes grass, especially on the hill slopes, which are at present clothed with coarser and poorer grasses. Nurseries of Kikuyu may be formed in suitable places and contour strips about half-way up the hillsides, of 6—8 feet or more wide, cleared and planted with cuttings about 2 feet apart each way. Transplanting of cuttings from the nurseries into these strips should be done as early as possible in May or June to enable them to strike root and spread as much as possible before the dry weather starts in November—December. If 6—10 such plots were laid out on representative hills, it would soon become clear whether Kikuyu grass can flourish under the conditions and whether it is capable of withstanding the comparatively long drought. Seed of Rhodes grass may be sown at the beginning of the rains in areas which under the shifting system of cultivation, are considered to be unfit for further cropping. If these grasses are successful, I am sure, they will prove of greater value for stock-grazing than the rough herbage at present on the hillsides.

In Jeypore and Budragumma where paddy is milled in large quantities, the bran remains as a by-product, as it does not bear transport charges to the markets on the plains. This could be more largely used as an artificial food for cattle, not only for working cattle, but also for breeding stock during the dry period. There is undoubtedly ample food produced during the year if it was only properly managed and conserved to meet the needs of the dry weather.

In the matter of transport, it is interesting to report that the Diwan of Jeypore is now experimenting with charcoal suction-gas engines. With abundance of wood, charcoal is produced at a low rate and the gas produced, can be adapted for use on stationary engines, tractors, lorries or buses. These however will not eliminate the bullock or buffalo as a prime mover for the small cultivator and therefore I consider that the development of cattle-breeding and the further development of buffalo-breeding stands a very fair chance of success. One of the greatest boons in live-stock production is that the cattle can transport themselves, whereas all other products have to be transported. If the article is bulky, and the market distant, costs of transport will so affect actual prices to the producers that production may be totally uneconomical; therefore all bulky and cheap products, e.g., rice bran, which does not repay transport, should be fed to cattle. The new railways under construction will not seriously affect the position as transport of material to rail-head will still devolve on the bullock.

(12) SUMMARY.

(1) Owing to the uneven distribution of rainfall in the Agency tracts, there are not such possibilities for the development of permanent crops as the total rainfall would indicate.

(2) Citrus fruits generally would appear to offer better prospects than crops as coffee, especially, if plantations can be irrigated or pot-watered. The development of markets for produce would increase the demand and stimulate further production.



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(3) Development of these tracts will have to be done mainly through the annual crops, but until such time as more established methods of agriculture are practised, it is very difficult to indicate any means whereby agricultural knowledge can be spread and improved methods introduced. Direct methods by posting agricultural demonstrators have already been tried without success.

(4) Cattle-breeding by the use of good type sires and improved feeding of stock by the means indicated, are sound improvements and appear to be the easiest of execution of those which can be suggested at the present time.

(5) Attention is drawn to the benefits which might accrue from the introduction of the grasses mentioned for fodder and also from the trial of various legumes both from the point of view of their effect on malarial mosquitoes and production of fodder for stock.

I take this opportunity of expressing my indebtedness to all those who helped me during my tour.

D. G. MUNRO,  
*Deputy Director of Agriculture, Coimbatore*

## II

**Endorsement No. 943-F/28-1, Revenue, dated 31st July 1928.**

[Agency—Development of Agriculture—Mr. Munro's report—  
Letter from the Director of Agriculture, dated the 19th April 1928,  
D. Dis. No. D/722 of 1927.]

Referred to the Board of Revenue for remarks.

(By order)

C. P. KARUNAKARA MENON,  
*Assistant Secretary to Government.*

To the Board of Revenue (Land Revenue and Settlement) (with a copy of the letter from the Director of Agriculture and Mr. Munro's report).

## III

**Proceedings of the Board of Revenue (Land Revenue and Settlement), Mis. No. 612, dated the 28th February 1929.**

H. G. STOKES, Esq., C.S.I., C.I.E., I.C.S.,  
Commissioner of Land Revenue.

*Read—the following papers :—*

(i)

Endorsement from Government, Revenue Department, No. 943-F/28-1,  
dated 30th July 1928.



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(ii)

Letter from C. A. HENDERSON, Esq., I.C.S., Agent to the Governor in Ganjam, dated Chatrapur, the 21st August 1928, D. Dis. No. 3524/26.

[Reference.—Board's Reference No. A. 3195/28-2, dated the 9th August 1928.]

I have read Mr. Munro's report with great interest. From personal conversation with him I had anticipated some of it and commented on the subject in my administration report for 1927-28.

2. I have always been of opinion that the problem of marketing is the first thing to be considered in dealing with questions of increased or improved cultivation. It was this that led chiefly to my condemnation of my predecessor's fruit garden at Bodigumma Hill near Lingagoda [paragraph (9) (v) of Mr. Munro's report]. The nearest market for fancy fruit is Calcutta. I regret that Mr. Munro was not allowed sufficient time to enable him to see the orange growing in the Parlakimedi Maliahs. Yet even here the market is occasionally glutted.

3. I think it would be feasible to start some form of agricultural teaching in the training school at G. Udayagiri. It would, in my opinion, be of more practical value than some at any rate of the subjects they are called upon to study. And the knowledge might in course of time filter down. But the teacher would have to be an exceptionally good man. I am not yet certain whether a similar scheme is required for or could be started at Serango.

*Paragraph 10 (c).*—I have commented on the general ignorance of the malaria carriers in this Agency in my administration report. It seems certainly probable that the paddy flats are the main source, but this cannot be said with certainty. In the copy of the report sent to me I find a marginal note against paragraph 6 (a) by the First Member of the Board. The water lying in the fields must have been an observation at G. Udayagiri of which it is a very recognizable picture. Water was standing in the paddy flats north of the bungalow there in March.

I was prepared to try some specimens of the African grasses myself at Chatrapur to see if they would make good. But I could not undertake to provide an irrigated nursery for 1,000 (*sic*) setts which were offered me from Hosur. And the missionaries at G. Udayagiri are too fully occupied with other branches of work to take up agricultural operations as propagandists. It is, in fact, very difficult to see how increased agricultural knowledge is to be disseminated otherwise than by a definite course of instruction at a training school, as suggested; and even then the process would



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probably be very slow. A little has been done in the way of making vegetable gardens at schools and police stations; but the dignity of labour is unknown and the necessity for it, I fear, inadequately appreciated. It has to be repeated that the desire for improvement in all forms of agriculture must come first and chiefly from the agriculturist.

(iii)

Letter from J. B. BROWN, Esq., I.C.S., Government Agent, East Godavari, dated the 27th August 1928.

[Board's Reference No. A. 3195/28-2, dated 9th August 1928.]

I have the honour to state that Mr. Munro did not visit the East Godavari Agency and his remarks appear to be based on the conditions obtaining in Ganjam and Vizagapatam Agencies.

2. I have discussed the question with the Assistant Agents Polavaram and Bhadrachalam. The important fruit crop is oranges which are grown in the interior of the Chodavaram and Yellavaram divisions. The places are beyond the reach of metalled roads and are very malarial. Under existing conditions it is not practicable to develop this particular crop. The popular superstition is that these oranges carry malaria and this militates against the development of markets for them.

3. The development of agriculture cannot profitably be undertaken until transport facilities are provided by opening up new roads, measures for protection against malaria are undertaken and the general level of education is raised.

(iv)

Letter from G. T. H. BRACKEN, Esq., I.C.S., Agent to the Governor, Vizagapatam, dated 2nd October 1928, R.C. No. 798/28-G-1.

[Reference.—Board's Reference No. 3195/28-2, dated 9th August 1928.]

I have the following remarks to submit on Mr. Munro's report.

The time allotted for Mr. Munro's deputation was quite inadequate for him to obtain a real knowledge of the Agencies. Considering the limited time at his disposal, Mr. Munro's observations seem to me remarkably accurate so far as they went and his conclusions generally sound.

2. The report rather conveys the impression that the whole of the Agency is a plateau 1,000—3,000 feet high and that the inhabitants are all backward and uncivilized. Though this is in the main true of Ganjam, it is only partly true of Vizagapatam and still less true of East Godavari which contains a considerable area of semi-plains country. Unfortunately Mr. Munro had no time to visit the Godavari Agency or he might have modified some of his conclusions.



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In the latter two Agencies there are a large number of villages which practise settled cultivation both wet and dry, and some of them in Godavari have been surveyed and settled. In these villages conditions approximate to those in the plains and I can see no reason why the activities of the Agricultural Department should not be extended to at least these semi-plains areas at once.

Failing the appointment of Agricultural Demonstrators, the suggestion that selected officers of the Revenue Department may be given a course of agricultural training is worth consideration.

3. I do not think the training of schoolmasters in agricultural methods is likely to result in much practical results except in a few exceptional cases, but the curriculum of Agency schools might be better adapted to Agency conditions.

4. I agree with Mr. Munro that the first problem to be faced is that of malaria. No serious development of most parts of the Agency can be expected until malaria is to some extent controlled. I would suggest in particular that experiments be made in the cultivation of the clovers and other fodder crops which Sir William Willcox has recommended as producing conditions unfavourable to malaria as in the quotation made by Mr. Munro. I am attempting an experiment in this direction in connexion with the anti-malarial operations in Gudem Agency, but I find I need a trained agriculturist to conduct the operations with any real hope of permanent results. I am shortly submitting a report on the anti-malaria operations sanctioned in G.O. Mis. No. 832, P.H., dated 6th April 1928, and will suggest the appointment of an Agricultural Demonstrator to be stationed at Lammasingi. From there he will be able to supervise experiments in the four centres selected for anti-malaria work, investigate general agricultural conditions in different types of Agency villages and examine further the possibilities of citrus fruits.

5. As regards plaintain products and fruit trees, the Government have recently granted an area of 350 acres near Lammasingi (G.O. Mis. No. 1027, Revenue, dated 10th May 1928).

The experiments made by the lessees in coffee cultivation and fruit-growing will give valuable data for future development. Incidentally I may remark that the rainfall statistics of Lammasingi are quite untrustworthy. I find that the rain-gauge is situated in a thick garden overgrown by trees and that the schoolmaster who furnishes the figures does not really understand the measurements. I should judge that the figures in Mr. Munro's report are lower than the real rainfall. I have selected a site for a new rain-gauge, provision for which will I hope be made, and entrusted the registration of rainfall to the Health Inspector now stationed at Lammasingi.



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6. I agree generally with the conclusions in Mr. Munro's summary except in so far as he underestimates the extent of established methods of agriculture especially in East Godavari district.

*Resolution—Mis. No. 612, dated the 28th February 1929.*

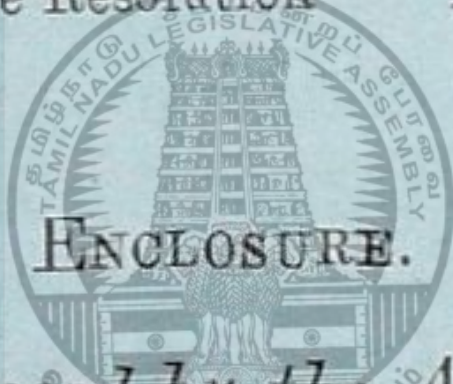
Submitted to Government.

2. The Board agrees with the views expressed at the Agency Conference held at Waltair on the 9th and 10th February 1929, a copy of which is enclosed.

(True extract)

B. G. HOLDSWORTH,  
*Secretary.*

To the Secretary to Government, Revenue Department,  
with a copy of the Resolution No. 20 passed at the Conference.



*Resolution No. 20 passed by the Agency Conference held  
at Waltair in February 1929.*

20. *A consideration of Mr. Munro's report.*—(1) The Conference supports Mr. Munro's practical suggestions regarding cattle-breeding, etc., in paragraph 11 of his report. The Conference agrees with Mr. Munro that annual crops cereals, industrial crops fruit especially oranges and limes are most suited to the Agency. In general, the conclusions of paragraphs 8, 9 and 10 are accepted.

(2) Further it suggests that there should be a staff of Agricultural Demonstrators and one demonstration farm in each Agency. The activities of the staff should be confined to those parts of the Agencies where the population is more intelligent and more likely to benefit from instruction. In this respect the Conference differs from Mr. Munro. The farms would serve as places where selected men of the Agency staff could be sent for instructional purposes; the men would be selected with reference to the interest and capacity they show in that direction.

(3) The question of agricultural teaching in schools might be left to future development but the curriculum of the schools should be given some kind of agricultural bias.

(4) The Conference notes with approval Mr. Munro's remarks about the importance of organizing markets. Marketing facilities will follow the opening up of roads and this aspect of the matter will be considered more in detail in items of the agenda dealing with communications.



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#### IV

#### Official Memorandum No. 1295-III/29, Development, dated 23rd March 1929.

[*Reference.*—Letter from the Director of Agriculture, D. Dis.  
No. D-722/27, dated 19th April 1928—Mr. Munro's report—Agency.]

An extract from the proceedings of the Agency Conference so far as it relates to Mr. Munro's report is forwarded to the Director of Agriculture who is requested to offer his remarks on the suggestions contained in paragraph 2 thereof.

(By order)

M. C. B. KOMAN,  
*Under Secretary to Government.*

To the Director of Agriculture with extract.

Letter from R. D. ANSTEAD, Esq., C.I.E., M.A., Director of Agriculture, Madras, to the Secretary to Government, Development Department, dated Camp, Ootacamund, the 26th April 1929, D. Dis. No. D. 556/29.

With reference to Government Memorandum No. 1295-III/29-1, dated 23rd March 1929, I have the honour to offer the following remarks.

2. If the Agency Conference has decided that work should go forward in spite of the difficulties which have been pointed out by Mr. Munro, I desire to impress upon Government the necessity for dealing with the problem in a sound manner from the very beginning. If this is not done, no good will result. I would point to the direlict coffee station, Lammasingi, as a standing example of what should *not* be done.

3. In the first place, it is necessary to realize that no demonstration can be done until we have something to demonstrate and are quite sure that that something is correct. All demonstrations must be preceded by careful research and experiment. The first thing to do, therefore, is to establish one or more experiment stations in suitable localities to examine and obtain information upon the following points:—

- (a) Suitable methods of growing various crops under the conditions obtaining in the Agency,
- (b) suitable rotations of crops,
- (c) suitable manures,



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- (d) suitable treatment for permanent crops, and
- (e) the necessity for irrigation.

On these points we have, at present, no information so far as the Agency is concerned, and therefore any talk of demonstration farms is premature as we have nothing to demonstrate. The difference between a demonstration farm and an experiment station and that it is essential to have the latter before the former is possible must be grasped, and if any permanent good is to be done unless results on which we can depend are first obtained on experiment and research stations mistakes are certain to be committed and such mistakes would make future work still more difficult and would be worse than leaving matters as they are at present.

4. Each of the experiment stations must include dry crops, paddy, and permanent crops like limes, oranges, mangoes, etc. I would suggest the following areas as a minimum for each station:—under dry crops 25 acres, paddy rain-fed and swamp 15 acres, and citrus and other fruits 10 acres—a total of 50 acres.

5. It will be necessary to have really sound men in charge of these stations with a knowledge of the language. Where these men are to be found it is difficult to say. We have all too few men now in the department really capable of taking charge of experiment stations and few of these are Telugus. Those in charge of our existing experiment stations cannot possibly be spared. It would be a pity to waste the good well trained men we have now got in malarial places where the chances of doing really good work are vague and not nearly so promising as they are in the plains where we have already made considerable advance. It will, I think, be admitted that the work we are already doing should not be checked or in any way sacrificed to the Agency.

6. This being so, the Agency stations and their staff will have to be gradually built up. The best way to do this is for the Agency Conference to select six men immediately to be sent to the Agricultural College in July next for training, with scholarships, if necessary, and on the distinct understanding that after taking their B.Sc. Ag. degrees they will return to the Agency and be posted on the experiment stations there. The College course takes three years so that no time should be lost if this plan is to be adopted. In the meanwhile, sites for the stations may be selected, the land acquired, and the stations generally got ready for work. After this, I would suggest that two men per annum are chosen in a similar way and sent to the College in order to maintain staff. It should be realized at the very beginning that in this locality it will be necessary to have a big leave reserve as there are bound to be casualties due to malaria.



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7. The first thing to do after getting the experiment stations started will be to study as closely as possible the local agriculture and conditions and correlate these with experiments tried out on the stations. This will give time for the local men to settle down and get to know their work and the local conditions thoroughly. It is quite useless to send raw-graduates straight from College into the districts and expect them to do any good. They must have preliminary training on a farm to learn the work which they will have to do.

8. When the stations have been running for some years and the staff have been trained and have thoroughly learned the local conditions and their relation to the results of experiments conducted on the farms sufficient knowledge will have been acquired to utilise it for instructional purposes and actual demonstrations can then begin and only then.

9. I am convinced that if any permanent good is to be done and effort and energy not frittered away this is the only way in which work can be taken up in the Agency and that it is quite useless trying to do anything in a hurry. As I have said before, we have no staff which we can send out at once into the Agency and even if we had we have nothing to demonstrate and therefore we could do no good at all.

10. If Government agree with my views, as I trust they will, I would point out that no provision has been made in my re-organization scheme or in my ten-year programme submitted with my letter R.O.C. No. A. 662/28, dated 29th August 1928,\* for work of this sort and it must be provided for in the budget of 1930-31 quite separately and in addition to the programme laid down in my letter. In this connection, I would call attention to paragraph 170 of my letter quoted above in which I stress the point that the programme of work therein laid down, and which has now been accepted by Government, to have the first call on such funds as can be spared and that it should not be altered or detracted from to find money for other schemes and if at any time during the next ten years covered by my programme it is decided to take up any work not included in it then the funds for doing so must be provided as an extra item. These Agency proposals appear to me to be a case in point and if they are to be taken up, I would request that the money for it be found as an extra allotment in 1930-31 over and above that forecasted in my programme.

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\* Not printed.



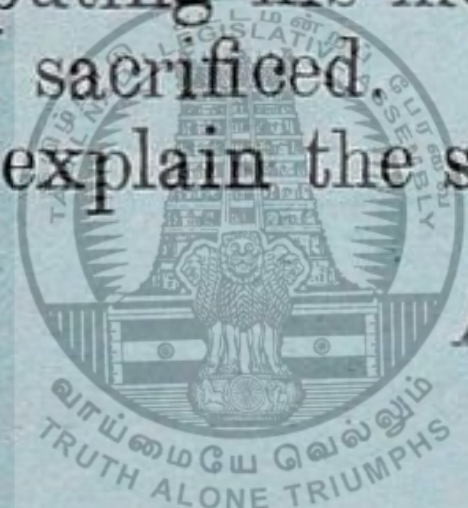
[27th March 1930]

## VI

**Official Memorandum No. 1295 III/29-2, Development,  
dated 4th June 1929.**

[Letter from the Director of Agriculture, D. Dis. No. D. 556/29, dated 26th April 1929—Mr. Munro's report on the Agency.]

In paragraph 6 of his letter read above the Director suggests that six men should be trained at the agriculture college for work in the Agency. The result of this would be that no work could be started there for at least three years. The Government consider that experimental work in the Agency is urgent and likely to prove of great value and they cannot therefore agree to its postponement for that period. In the other departments of Government, permanent officers of the regular service are posted to the Agency for a term of years and it is not clear why a similar course should not be followed in this case also. The Government are also unable to understand the statement of the Director that he is unable to spare any men for the Agency and that by deputing his men for the Agency the work in the other parts will be sacrificed. The Director is requested to reconsider the question and explain the situation more clearly.



A. McG. C. TAMPOE,  
*Secretary to Government.*

To the Director of Agriculture.

## VII

Letter from G. R. HILSON, Esq., B.Sc., Officiating Director of Agriculture, to the Secretary to Government, Development Department, dated Camp, Hosur, the 12th October 1929, D. Dis. No. D. 877/29.

I have the honour to reply to Memorandum No. 1295-III/29-2, dated the 4th June 1929.

2. I regret that I have not been able to reply to this reference sooner as I took charge at a very busy time and as I am still in process of finding out exactly what is going on in the department, a complete knowledge of which is necessary if an exhaustive reply to the memorandum in question is to be given.

3. I am in entire agreement with the views expressed by Mr. Anstead in his letter No. D. 556/29, dated the 26th April 1929.

We have not yet got anything like the number of Telugu men that we require for work in the Plains, where we are in a position to carry out propaganda work which is not the case in the Agency. If an experimental station is to be opened in the Agency immediately we shall have to withdraw men from the tracts in which we are



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already at work in order to man this station. We shall, therefore, increase the shortage which is already bad enough and we shall be working entirely contrary to our own declared policy of concentrating our energies and not to dissipate them.

4. Conditions in the Agency are not nearly so severe as they are in the Ceded districts or in parts of Coimbatore district. There are two lines of work crying out for immediate attention (*a*) the improvement of agriculture in areas where the soil is light and the rainfall low and precarious, e.g., Anantapur district, and (*b*) the determination of the best use to make of water on the light well drained soils to be found in Coimbatore and Salem districts. These, I submit with due deference, are items of greater urgency than the opening of a station in the Agency. The latter of these two items of work will, in fact, produce results which will be of value in the Agency when work is started there.

5. I therefore request that the Government will be pleased to adopt the suggestion made by Mr. Anstead in paragraph 6 of his letter which I have quoted.

**Official Memorandum No. 4730-III/29-1, Development,  
dated 13th November 1929.**

[Reference—Letter from the Director of Agriculture, D. Dis. No. D. 722/27, dated 19th April 1928—Mr. Munro's report on the Agency.]

The Director of Agriculture is requested to offer his remarks at a very early date in consultation with the Director of Veterinary Services on the suggestion contained in paragraph 11 of Mr. Munro's report regarding the stationing of Kangayam bulls in selected villages under the control of Veterinary Assistant Surgeons.

The reference may be treated as very urgent.

S. V. RAMAMURTI,  
*Secretary to Government.*

To the Director of Agriculture.

Copy to the Director of Veterinary Services.

**IX**

Letter from G. R. HILSON, Esq., B.Sc., Officiating Director of Agriculture, to the Secretary to Government, Development Department, dated Camp, Poosa, the 5th December 1929, D. Dis. No. D. 1779/29.

I have the honour to refer to Memorandum No. 4730-III/29-1, dated the 13th November 1929.



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2. I have discussed this matter with the Director of Veterinary Services. We are of opinion that the bulls should be stationed near veterinary institutions. There is at present only one such institution at Jeypore. Therefore, for the present, only one bull can be placed at stud in the Agency tract.

Copy to the Director of Veterinary Services.

**X**

**Official Memorandum No. 4730 III-29/2, dated 14th  
December 1929.**

[*Reference*—Letter from the Director of Agriculture, dated  
5th December 1929, D. Dis. No. D. 1779/29.]

In the above letter it is stated that breeding bulls could be stationed only near veterinary institutions and that there being only one such institution at Jeypore only one bull could be placed at stud in the Agency tract. The Government observe that there are three veterinary dispensaries in the Agency at Jeypore, Bhadrachalam and Polavaram and four touring veterinary assistants with headquarters at Russellkonda, Koraput, Bhadrachalam and Polavaram. It is not understood why the bulls should not be stationed at all these institutions or kept in charge of important ryots or with co-operative societies in the Agency and the touring veterinary assistants asked to supervise them. The Director of Agriculture is requested to offer his remarks on the above suggestions at a very early date in consultation with the Director of Veterinary Services. One bull for the whole of the Agency will hardly be enough. Mr. Munro recommended that sixteen bulls should be stationed.

This may be treated as very urgent.

S. V. RAMAMURTI,  
*Secretary to Government.*

To the Director of Agriculture.

**XI**

Letter from the Director of Agriculture, Madras, to the Secretary to Government, Development Department, dated the 20th December 1929, R.O.C. No. D. 1954/29.

I have the honour to refer to Memorandum No. 4730-III/29-2, dated the 14th December 1929, Mr. Munro's suggestion was that sixteen bulls should be placed at stud in the Vizagapatam and Ganjam Agencies. I therefore limited my consideration of this proposal to those two Agencies. As Jeypore is the only place in either of these Agencies at which there is Veterinary institution there was only one place to suggest.



27th March 1930]

2. It now appears that Godavari Agency is to be considered. This being so I have no objection to bulls being placed at Bhadrachalam and Polavaram. We have already a bull at Koraput and Russellkonda is not in the agency.

3. This provides for three bulls. If three more are required then they will have to be placed in charge of co-operative societies which can be trusted to look after them. On this point I have no information.

**Order—No. 246, Revenue, dated 8th February 1930.**

Recorded.

2. The Agency Conference which met at Waltair in February 1929 considered Mr. Munro's report on the development of agriculture in the Agency tracts. The chief recommendations made by the conference were (1) that there should be a staff of agricultural demonstrators and one demonstration farm in each Agency, and (2) that a number of Kangayam bulls should be placed in selected villages in the Agency tracts. These recommendations are under the consideration of the Government and orders on them will issue separately in the Development Department.

(By order of the Governor in Council)

H. R. PATE,  
*Secretary to Government.*

To the Board of Revenue (Land Revenue and Settlement).

„ Agent to the Governor, Ganjam.

Vizagapatam.

„ Government Agent, East Godavari.

„ Development Department.

„ Local Self-Government Department.

„ Law and Education Department.

„ Public Works and Labour Department.

„ Secretary to the Legislative Council (with 175 copies).

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